



From The President

The first quarter of 2021 has been and gone and we look forward to a busy second quarter with some great events on offer in coming weeks.

We are proud sponsors this year of the Houses Awards which puts AIH front and centre of the Garden and Landscape category, and it is our honour and privilege to be part of recognising the awardees' skills and craftsmanship in July and August 2021.

Please check out our events page for more exciting webinars in the next few months as well as the lead up to our own awards ceremony and conference in October 2021.

With best wishes

Michael Casey MAIH RH
National President
Australian Institute of Horticulture

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Cavenagh Street, Darwin CBD shade structure. Image/ ABC News: Michael Franchi.

Is The Darwin Shade Shelter Experiment An Urban Horticultural Failure?

By David Thompson, Engagement Manager Australian Institute of Horticulture

In 2018, the Northern Territory government invested \$2.7 million on an experimental structure to cool roasting-hot Cavenagh Street in Darwin. This came after research showed the street heated to more than 70 Degrees Celsius on hot days, described by Chief Minister Michael Gunner as “a river of fire” and that a reduction of between 2C and 4C was necessary to make Darwin “walkable and liveable”.

After eighteen months, a Freedom of Investigation enquiry into the evaluation conducted by the University of New South Wales at an additional \$80,000 has revealed the structure offers cooling beneath the structure of just 0.7C, a result the Opposition Leader Lia Finocchiaro described by saying “anyone could stand under the shade structure, look up and tell you that it’s not doing its job”.

However, the debate ignores several aspects of the long-term outcomes from urban plantings for heat reduction.

The Challenges Of Urban Plantings

For a start, the steel framed structure is long way from being fully covered, which means that large amounts of solar energy are still able to make it onto the street surface. The research found that the structure currently reduced temperatures outside the shade structure from 32.1C to 31.4C, just 0.7C difference.

The planting choices, Rangoon Creeper Vine (*Quisqualis indica*) and Orange Trumpet Vine (*Pyrostegia venusta*) are vigorous plants that benefit from the space to sprawl and grow into dense woody vines that will eventually cover the structure.



Rangoon Creeper Vine (*Quisqualis indica*). Image/ Tatiana Gerus via Wikimedia Commons.

Until these provide dense coverage of the surfaces beneath the shade structure, it seems unrealistic to expect major temperature reductions.

Even then, in Darwin's humid environment that is normally in the thirties, how likely is it that plantings and shade can create cooler environments underneath the structure?

"Urban plantings create relative cooling in several ways", says Associate Professor Sebastian Pfautsch at Western Sydney University.

"The direct effects of providing shade occur when solar energy is absorbed or deflected by the leaves – plants use most light wavelength except green, and this absorbs heat when there is a large leaf surface area that would otherwise heat the pavement below.

"Secondly, plant transpiration uses energy to convert liquid water inside leaves to vapour, and this energy conversion can absorb heat at a large scale. But at a smaller scale, any cooling is minimal when their air is so humid and warm", he says.

More Time Needed

The Darwin shade structure is designed to provide cooling of around 2-4C in the long-term, likely a twenty-year timeframe. As such, eighteen months is too soon to provide adequate data or plant growth.

"Actually, the progress so far shows that even with an early planting, there is evidence of modest heat reduction", says Matt Mitchley MAIH RH, based in Cairns which is also exposed to high urban temperatures and humidity.

"The designers would have planned for the long term effects when the plants have fully covered the structure. They would not have promised that the immature plantings could provide the stated benefits", says Matt.

Time will tell if innovations like these can improve the liveability of our warming urban spaces.

As climate change amplifies temperatures that are then warmed further through urban heat island effects, covering hard surfaces with plants will become more important.

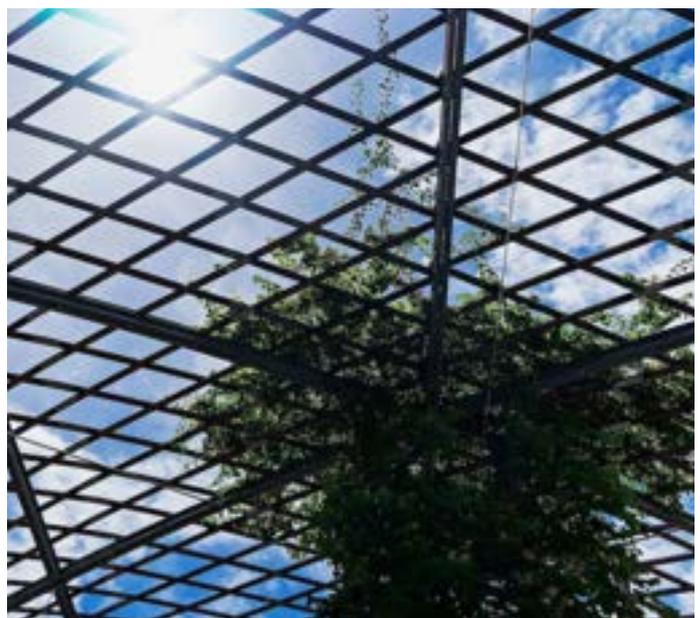
The NSW Department of Industry and Environment recently awarded several new grants to investigate targeted approaches to urban cooling through plantings.

"Our team is working with Junglefy Pty Ltd and Penrith City Council to trial plantings in some of the hottest parts of Penrith such as carparks and sunny facades – with full sun and no shade, these places just absorb heat all day long and re-radiate it back at night", says Associate Professor Pfautsch.

"They are ideal for testing whether plant covering can both thrive as well as reduce heat absorption for a lower-heat Penrith".



Orange Trumpet Vine (*Pyrostegia venusta*)
Image/ B.navez via Wikimedia Commons.



Cavenagh Street, Darwin CBD shade structure. Image/
ABC News: Michael Franchi.



image/ Andrew Dunn via Wikimedia Commons.

Forgotten Fruits: The Medlar

By David Thompson, Engagement Manager Australian Institute of Horticulture

Food critics of the 19th Century were just as direct about their feelings toward the Medlar as they would be today, possibly because the Medlar (*Mespilus germanica*) is largely inedible until, it has decayed and ripened properly.

Yet this fruit has a fascinating history.

When scientists uncovered a 2000-year old Roman toilet in what is now Switzerland, they uncovered the well-preserved seeds of an unusual fruit.

Covered by the waters of the Rhine River for most of that time, scientists determined that the seeds belonged to a relative of the apple in the Rosaceae family.

Despite its reputation for sourness and the cause of stomach complaints when eaten fresh, the Medlar was a popular fruit through the Medieval period and the Middle Ages, gracing the table of kings and royals.

The Medlar is mentioned in Chaucer's *Canterbury Tales*, Shakespeare's *Romeo and Juliet*, and the two-time queen consort Anne of Brittany's *Book of Hours* – a kind of illustrated religious manuscript popular in the Middle Ages.

Henry VIII had the Medlar planted at Hampton Court.

“Only One Degree Better Than A Rotten Apple”



Medlar fruits, a common appearance in artworks. Tapestry from around 1500. Image/Alamy.

'Bletting' The Fruit Makes It Edible

When freshly-picked, Medlars are tough, bitter and astringent. However, food curators in the Middle Ages found that resting them for several weeks in dry sawdust caused them to soften, where they lost their tannins and became more acidic.

The resulting texture was described as being similar to baked apple, with soft, fall-apart flesh with a tangy flavour, or 'like over-ripe dates mingled with lemons, and a slightly grainy texture'.

In 1839, a botanist coined the term 'bletting' to describe this process of ripening to an edible state.

The fruit was used in jams, jellies and on its own until the arrival of more flavourful tropical fruits such as pineapples after World War Two, though not before becoming an important part of the Dig For Victory gardening movement.

Productive and Ornamental

Medlars are also statuesque and attractive deciduous trees, ideal landscape features that makes good shade trees in leaf and attractive in flower with white five-star petals.

Some trees have lived for centuries, such as one planted in the UK in 1820 that is still abundantly-productive.

As more people come to know about this unusual fruiting tree, they are coming back into popularity. They make a great talking point and numerous Australian fruit trees suppliers have them on offer.

“The Medlar is not... worth a turd until it’s ripe, and then it tastes like sh...”



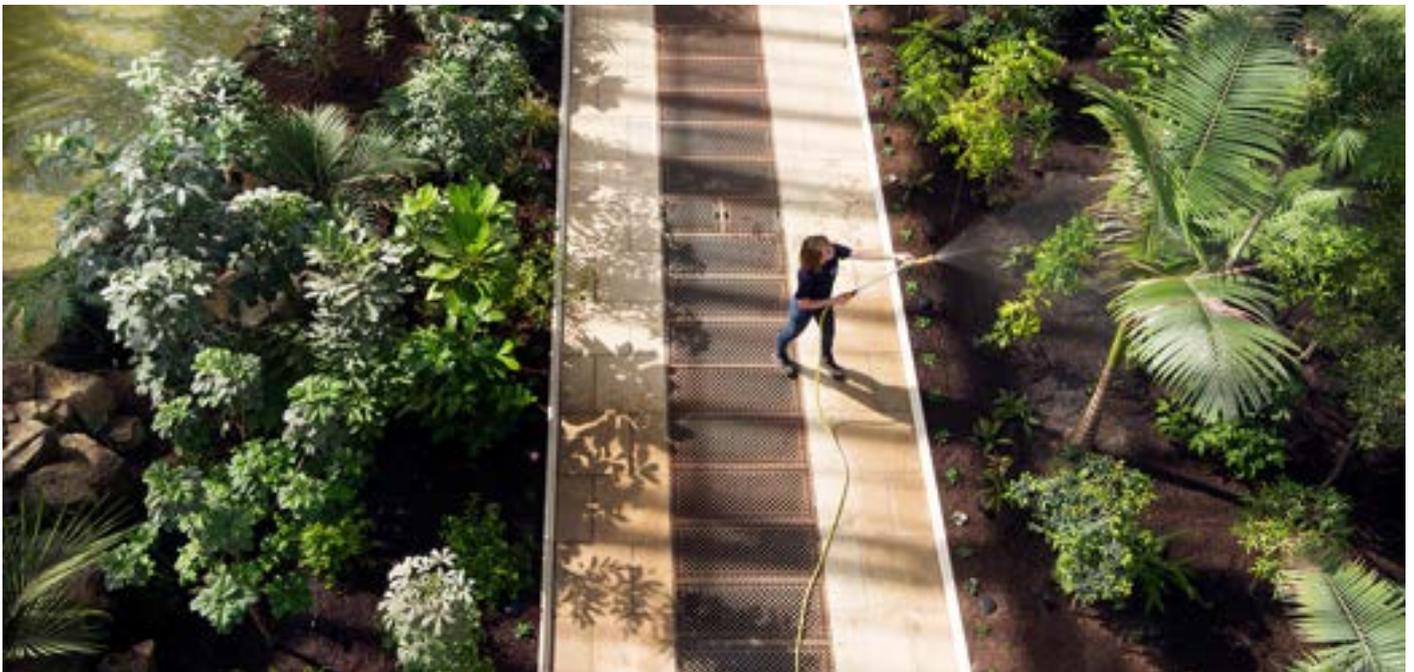
'Bletting', the Medlar fruit ripening process. Image/ Nadiatalent via Wikimedia Commons.



Medlar (*Mespilus germanica*) Image/ Alamy.



Medlar (*Mespilus germanica*) Image/ Karelj via Wikimedia Commons.



Horticulturist watering plants in the Temperate House, Kew Gardens. Image/ RBG Kew.

Kew Gardens Launches Manifesto For Change 2021 – 2030

By David Thompson, Engagement Manager Australian Institute of Horticulture

Through its newly-launched decadal plan to address the climate and biodiversity crises facing the Earth and humanity, Kew Gardens has set out a comprehensive and ambitious plan to put science and conservation at the heart of its strategies over the next ten years.

The Manifesto for Change 2021-2030 is based on five key principles that collectively foster interest in science, action to reduce animal and plant extinctions, sustainably manage the planet's natural resources.

These five principles are:

- **Delivering science-based knowledge and solutions to protect biodiversity and use natural resources sustainably:** RBG Kew scientists will identify and strive to protect species of plants and fungi globally, as well as revealing those that could be new sources of food, medicine, fuel or materials.
- **Inspiring people to protect the natural world:** RBG Kew will promote and provide access to knowledge, ideas and beautiful gardens that motivate individuals to be advocates for nature.
- **Training the next generation of experts:** The world needs brilliant scientists and horticulturists. RBG Kew commits to training students from the UK and around the world.
- **Extending our reach:** RBG Kew is a public body and charity with global collections and influence. It must be for everyone, disseminating its knowledge and collections both physically and digitally for global benefit.
- **Influencing national and international opinion and policy:** RBG Kew will speak with confidence and prominence to advocate policies aligned with its mission. It will be an exemplar of environmental responsibility in all that it does, including by exceeding net-zero carbon emissions to become climate positive by 2030.



“All life depends on plants and fungi, but natural resources are being degraded and destroyed at a rate unprecedented in human history”, said Richard Deverall, Director at Kew Gardens.

“We stand at a crossroads - the next decade will be critical if we are to reverse this environmental devastation.

RBG Kew is perfectly placed as a globally revered plant science institute to lead efforts in creating a world where nature is protected, for the benefit of humanity and our planet.

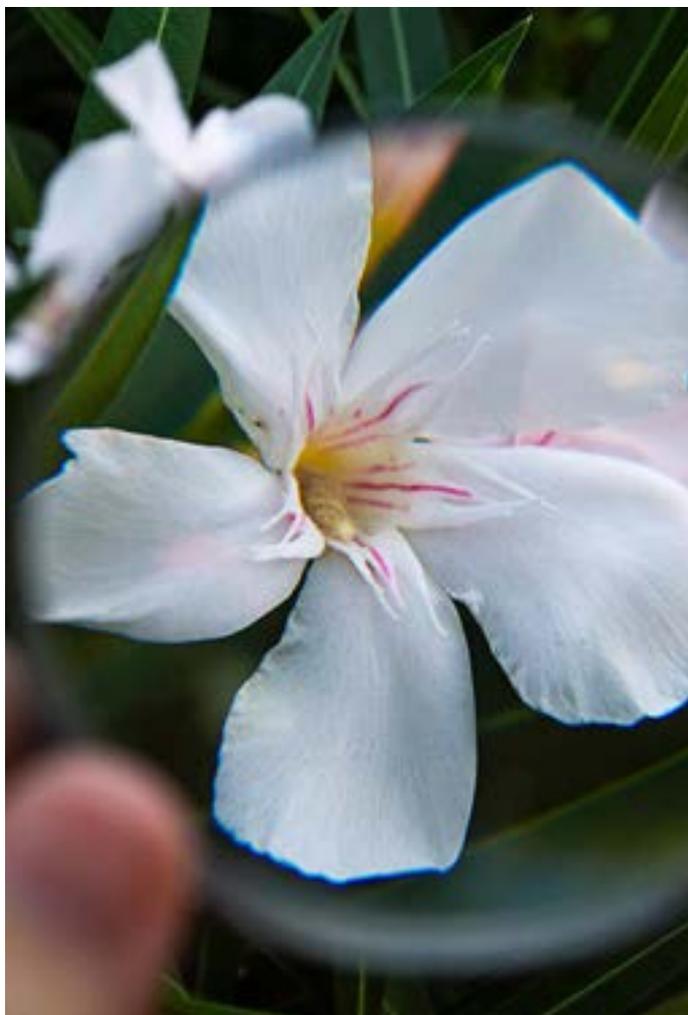
“As our Manifesto for change demonstrates, we will no longer be silent.

Drawing on our leading scientific research, unrivalled collections of plants and fungi, global network of partners, and our gardens at Kew and Wakehurst, as well as 260 years of history, we will seek to shape policy and practice in both the public and private sectors and lead by example as an advocate for environmental sustainability”.

More information on the **Kew Gardens Website**



Image/ RBG Kew.





Building Skills In Horticulture

By David Thompson, Engagement Manager Australian Institute of Horticulture

Search the web for advice about getting jobs in any industry and you'll find yourself inundated with generic, broad advice that can be hard to apply to your own situation. So many tips, so much advice – where do you ever start?

For those who have found a way into horticulture, they'll tell you about the friendly and collegial nature of the industry, with people who are passionate about life, nature, plants and making more beautiful spaces.

The Basics

It's worth starting by considering the nature of horticulture and the ways that horticultural businesses make money – this will help you understand where the opportunities are to end up providing a service, either as an employee or as a business owner yourself.

Horticulture is about growing quality plants that someone will pay for, whether it is for landscapes, food, amenity or cut flowers. It is only when someone pays for the product or service, that the business is able to operate and potentially pay its owners and staff.

Next Steps

Horticultural employers will always value broad and fundamental plant knowledge.

One of the best tips for horticulturists is to practice getting to know both Latin and common names for as many plants as possible. Every time you see a plant, look up its names both official (Latin) and common.

It is common to take Certificate, Diploma or Degree courses in horticulture as these give you a rounded understanding of horticultural fundamentals as well as a credential that demonstrates a certain level of achievement.

However, there are many other ways to gain knowledge and apply learning through short courses or specific online courses along with practical experience.

Networking and Connection

Most advice on the web tends to focus on creating a standout resume – and certainly, this is important in securing a position.

However, many jobs are filled through word of mouth, and the benefit of this approach is that it is more likely that your future employer can see you for the person you are, rather than a resume in a stack of applications.

This is why membership is important, because those personal connections can help you see what other professional horticulturists look like and how they approach their craft.

As For The Skills You Seek

Lastly, a tip that many professionals still don't think about enough – if you have an idea or a suggestion, find a way to put it forward.

You might have great ideas that could improve the customer experience, or save money, or capture some type of leading-edge innovation you've seen that could improve the business and its services or products.

Equally, you might want to develop your skills in a new area that could help you to grow your career within the horticultural business or the industry.

Our advice for putting forward a successful proposal includes:

- **Outline** the opportunity or challenge, clearly stating how addressing the issue would solve a problem or create an opportunity
- **Relate** the idea back to the business specifically – how would addressing the issue enhance the business you are in and improve the business?
- **Detail** the costs required to make it happen – this includes financial costs and also any requirements for time especially if you need to conduct training offsite that may impact on your daily work.
- **Thank** your employer or decision-maker for considering the idea and explain the next steps required to make it happen (eg registration or bookings, etc).



Most employers want to run better businesses but being busy they may not always have time or resources to address every idea immediately.

By putting it in writing, you can provide all the detail needed to make a decision and help your decision-maker understand what is a priority.

Final Words

Building skills in horticulture means taking a growth-minded approach to learning throughout your whole career.

Like all industries, horticulture is always changing as new trends and new ideas come to the marketplace with different inspiration and awareness of landscape and plant trends, design choices and new methods always emerging.

That is what makes horticulture so rewarding!





Image/ marqueyssac.com

The Hanging Gardens of Marqueyssac

By David Thompson, Engagement Manager Australian Institute of Horticulture

Built in the 17th Century the Chateau de Marqueyssac in the Dordogne Valley in the South of France is famed for its beautiful lush gardens with walkways that stretch for over 5 kilometres. The Lord of the manor Julien de Cervel planted the incredible gardens of boxwood plants (*Buxus* spp.). Today the sprawling gardens have 150,000 hand pruned boxwood plants in captivating geometric shapes aged over 100 years old.

The castle was built on cliffs overlooking the Dordogne Valley by counsellor to Louis XIV, Bertrand Vernet de Marqueyssac.



Image/ marqueyssac.com

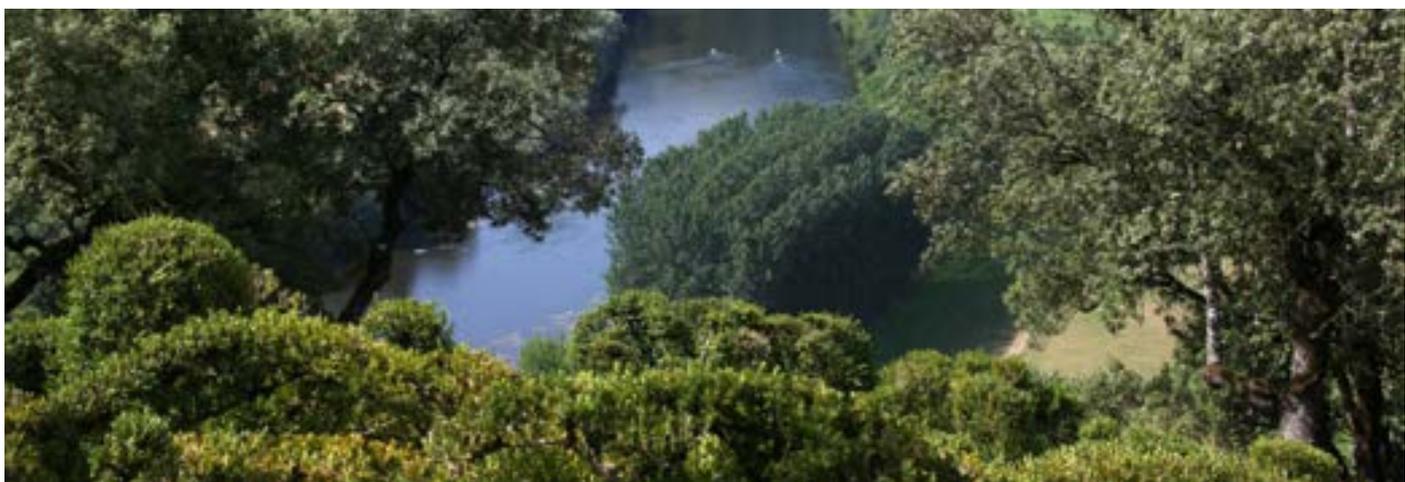
In the 1860s new owner and heir of the Marqueyssac, Julien de Cervel, with his passion for horticulture, began planting thousands of box plants with rounded shapes, some resembling flocks of sheep, forming the beautiful gardens.



Boxwood plants and hedges at the Chateau de Marqueyssac.



Image/ marqueyssac.com



Image/ marqueyssac.com

In March 1997 after major restorations the Marqueyssac was opened to the public. Designed with walking paths, it has three circular walks that lead to the Belvedere, an incredible balcony 192m high and 130m above the river with spectacular panoramic views of the Dordogne Valley.



The Belvedere. Image/ marqueyssac.com

From July to the end of August, the Marqueyssac is open on Thursday evenings and lit by candlelight. 2000 candles and 100 other light sources illuminate the gardens and musicians play throughout the park.



Candlelight evening at the Rosemary Path at the Marqueyssac. Image/ marqueyssac.com

Regional Vegetation

Different microclimates strongly influence the vegetation of the gardens, with distinct differences between the south side and the north side.

The south side, has a more Mediterranean microclimate with drier and more exposed sites.

The vegetation includes holm oak (*Quercus ilex*) whose dark foliage is the origin of the 'Black Perigord' naming of the region of Sarlat), traditional oaks, maples and berries.

The soils are calcareous and alkaline, which with the drier soils makes for more robust plantings.

To the north, the climate becomes more strongly influenced by the atlantic and includes softer vegetation such as hornbeams (*Carpinus betulus*), rural maple and oaks.

The dark and evergreen foliage of the holm oak is the origin of the « Black Perigord » in the area of Sarlat.

This garden is sure to impress with its bright green foliage and romantic, swirly shapes of box hedges.

Visit the **Hanging Gardens of Marqueyssac** for more information.



Image/ marqueyssac.com



Image/ marqueyssac.com



Image/ Jaruwan Jaiyanguyen/Shutterstock

Ransomware Gangs Are Running Riot – Paying Them Off Doesn't Help

By Jan Lemnitzer Lecturer, Department of Digitalization, Copenhagen Business School, The Conversation, February 17, 2021

In the past five years, ransomware attacks have evolved from rare misfortunes into common and disruptive threats.

Hijacking the IT systems of organisations and forcing them to pay a ransom in order to reclaim them, cybercriminals are freely extorting millions of pounds from companies – and they're enjoying a remarkably low risk of arrest as they do it.

At the moment, there is no coordinated response to ransomware attacks, despite their ever-increasing prevalence and severity. Instead, states' intelligence services respond to cybercriminals on an ad-hoc basis, while cyber-insurance firms recommend their clients simply pay off the criminal gangs that extort them.

Neither of these strategies is sustainable.

Instead, organisations need to redouble their cybersecurity efforts to stymie the flow of cash from blackmailed businesses to cybercriminal gangs.

Failure to act means that cybercriminals will continue investing their growing loot in ransomware technologies, keeping them one step ahead of our protective capabilities.

Daylight Robbery

Ransomware is a lucrative form of cybercrime. It works by encrypting the data of the

organisations that cybercriminals hack. The cybercriminals then offer organisations a choice: pay a ransom to receive a decryption code that will return your IT systems to you, or lose those systems forever.

The latter choice means that firms would have to rebuild their IT systems (and sometimes databases) from scratch.

Unsurprisingly, many companies choose to quietly pay the ransom, opting never to report the breach to the authorities. This means successful prosecutions of ransomware gangs are exceedingly rare.

In 2019, the successful prosecution of a lone cybercriminal in Nigeria was such a novelty that the US Department of Justice issued a celebratory press release.

Meanwhile, in February 2021, French and Ukrainian prosecutors managed to arrest some affiliates Egregor, a gang that rents powerful ransomware out for other cybercriminals to use.

It appears that those arrested merely rented the ransomware, rather than creating or distributing it. Cybersecurity experts have little faith in the criminal justice system to address ransomware crimes.

The frequency of those crimes is increasing rapidly.

An EU report published in 2020 found that ransomware attacks increased by 365% in 2019 compared to the previous year, resulting in €10.1 billion (£8.7 billion) of losses in payouts alone.

Since then, the situation is likely to have become much worse.

Even hospitals have suffered attacks. Given the potential impact of a sustained IT shutdown on human lives, healthcare databases are in fact actively targeted by ransomware gangs, who know they'll pay their ransoms quickly and reliably.

In 2017, the NHS fell foul of such an attack, forcing staff to cancel thousands of hospital appointments, relocate vulnerable patients, and conduct their administrative duties with a pen and paper for several days.

Waging war?

With ransomware spiralling out of control, radical proposals are now on the table.

Chris Krebs, the former head of the US Cybersecurity and Infrastructure Security Agency, recently advocated using the capabilities of US Cyber Command and the intelligence services against ransomware gangs.

The US government and Microsoft coordinated over such an attack in 2020, targeting the "Trickbot botnet" malware infrastructure – often used by Russian ransomware gangs – to prevent potential disruption of the US election.

Australia is the only country to have publicly admitted to using offensive cyber capabilities to destroy foreign cybercriminals' infrastructure as part of a criminal investigation.

Sustained operations of this kind could have an effect on cybercriminals' ability to operate, especially if directed against the gangs' servers and the infrastructure they need to turn their bitcoin into cash. But unleashing offensive cyberwarfare tools against criminals also creates a worrying precedent.

Normalising the use of the armed forces or intelligence units against individuals residing in other countries is a slippery slope, especially if the idea is adopted by some of the less scrupulous regimes on this planet.

Such offensive cyber operations could disrupt another state's carefully planned domestic

intelligence operations. They could also negatively affect the innocent citizens of foreign states who unwittingly share web services with criminals.

Further, many cybercriminals in Russia and China enjoy de facto immunity from prosecution because they occasionally work for the intelligence services.

Others are known to be state hackers moonlighting in cybercrime.

Targeting these people might diminish the ransomware threat, but it might just as well provoke revenge from hackers with far more potent tools at their disposal than ordinary cybercriminals.



The 2017 'WannaCry' ransomware attack hit some of the world's largest organisations, including the NHS. Image/ Marbury/Shutterstock.

Paying Up

So what is the alternative? Insurers, especially in the US, urge their clients to quickly and quietly pay the ransom to minimise the damage of disruption.

Then insurers allow the company to claim back the ransom payment on their insurance, and raise their premiums for the following year. This payment is usually handled discreetly by a broker.

In essence, the ransomware ecosystem functions like a protection racket, effectively supported by insurers who are set to pocket higher premiums as attacks continue.

Aside from the moral objections we might have to routinely paying money to criminals, this practice causes two important practical problems.

First, it encourages complacency in cybersecurity. This complacency was best exemplified when a hacked company paid a ransom, but never bothered to investigate how the hackers had breached their system.

The company was promptly ransomed again, by the same group using the very same breach, just two weeks later.

Second, some ransomware gangs invest their ill-gotten gains into the research and development of better cyber-tools.

Many cybersecurity researchers are concerned about the increasing sophistication of the malware used by leading cybercrime groups such as REvil or Ryuk, which are both thought to be based in Russia.

Giving these ransomware groups more money will only enhance their ability to disrupt more and larger companies in the future.

Banned Aid

In January 2021, the former head of the UK's National Cyber Security Centre called for cyber-insurance policies that cover ransom payments to be banned, arguing that such payments fund criminal organisations and only make ransomware attacks more common.

In response, the British Association of Insurers became the first European organisation to publicly defend the practice, arguing that paying the ransom was the cheapest option for companies.

Naturally, that also makes it the cheapest option for insurers. Ransom coverage also helps brokers sell cyber-insurance policies.

In the end, neither calling in the cavalry nor paying off cybercriminals are viable solutions to the growing ransomware problem.

Instead, a sustained effort must be made to build a more robust cybersecurity culture that stands a better chance of repelling ransomware gangs in the first place. This will demand commitment, not just from boards and CEOs, but from employees at every level of an organisation.

Improving cybersecurity in all companies won't just protect them from extortion hackers: it's the next frontier in our battle to harden our defences against state hackers, too. The sooner we start shouldering this pressing responsibility, the better.

This article was updated on March 8 2021 to add the total cost of ransomware payouts in 2019 as calculated by the ENISA Threat Landscape 2020 report.

Gold Sponsor FitzPatrick Insurance provides a range of advice and insurance products tailored for horticultural professionals at the Institute.

Ransomware is very common problem that can immediately lock computers and IT systems with malware that prevents all access to systems and computing equipment until a bounty is paid.

Often the only mechanism for retrieval is to perform clean installs and deploy backups,

which can be immensely time-consuming and may result in data and revenue being lost. While insurance may pay out these costs, it also results in higher premiums for everyone.

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- Please provide sources and references if you cite or refer to others' information in your article.
- Please provide 1-2 quality images. Photographs must be large enough to be used in a range of publications with a file size of between 1 and 5 MB (megabytes).

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