

of thorns, upright habitat and uniform ripening time. Its natural tendency to drop ripe fruit suggests it may also be suitable for mechanical harvesting. The green spherical fruits, each up to 20 mm across, have a thin skin and turn yellow as they ripen in early summer.

The Sunrise Lime arose from a seedling selected from a hybrid of the native finger lime and a calamondin (which is itself a mandarin-cumquat hybrid). It boasts dark glossy-green leaves, short spines and golden pear-shaped fruit.

The Blood Lime also has its ancestral origins in coastal rainforest, being selected from a cross between a sour-mandarin hybrid and a seedling of the pigmented variant of the finger lime (*C. australasica*). As the name implies, it has eye-catching blood-red fruit, which are oval-shaped. They ripen in winter.

Sykes and Beal are confident that these Australian newcomers to the citrus industry will fill an important niche, catering for the growing interest in so-called bush foods. By domesticating the native limes they believe harvesting pressure on wild trees will be eased and patchiness in the quality and availability of fruit for processing will be smoothed out as the area of native lime orchards expands.

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Steve Davidson



Plant breeder, Dr Steve Sykes, with one of the new citrus varieties, the Outback Lime, a tree with upright growth habit, no thorns at maturity, and berry-like fruit.

What's happening to India's vultures?

A DRAMATIC decline in India's vulture populations has sparked an international investigation into its cause.

According to the Bombay Natural History Society (BNHS), a recent survey found that more than 90% of Indian white-backed and long-billed vultures have been wiped out in at least 17 key locations. In some areas none remain.

Dr Andrew Cunningham, a veterinary pathologist at the Zoological Society of London, is working with the BNHS, the UK Royal Society for the Protection of Birds, and the Poultry Diagnostic and Research Centre, Pune, to help coordinate the investigation.

Cunningham says that in areas where declines are marked, abnormally high rates of nesting failure and adult, juvenile and nestling mortality have been observed.

'Also, vultures with obvious signs of clinical illness – lethargy and intermittent, but often prolonged periods of neck drooping – have been seen,' he says. 'It has been reported by the BNHS that birds exhibiting these clinical signs invariably die after a period of 30–32 days of illness.'

While there may be several reasons for localised declines, the BNHS has shown that normal ecological factors such as food supply and habitat availability are not constraining the vulture populations.

Initial investigations suggest a pathogen, such as a virus, could be the cause. To find out, Cunningham and Indian authorities have turned to CSIRO's Australian Animal Health Laboratory at Geelong in Victoria.

'The laboratory has a proven track record in detecting new and emerging diseases, particularly those with the potential to infect livestock,' laboratory director, Dr Mike Rickard, says.

'And it is one of a handful of facilities anywhere in the world where research can be safely carried out on foreign animal diseases and pathogens.'



Initial investigations suggest a pathogen, such as a virus, could be the cause of declining vulture populations in India.

While investigations continue, human and animal carcasses in India are creating a new problem.

'The decline of vultures is worrying from a biodiversity viewpoint, but also because a great number of carcasses are being left uneaten,' Cunningham says.

Vultures play an important role in scavenging human and animal carcasses. For example, India's 76 000-strong Parsees community does not bury its dead; bodies are placed in 'towers of silence', for the bones to be picked clean by vultures.

'Another concern is the increase in number of feral dogs indulging in the now abundant food supply. These animals can carry diseases such as rabies, which further threaten public health,' Cunningham says.

Researchers are also concerned that any infectious pathogen in the vultures has the potential to spread.

'The ranges of species in the genus *Gyps* overlap from India through central Asia and the Middle East to South Africa and Western Europe, and birds travel widely,' says Dr Debbie Pain, head of international research at the Royal Society for the Protection of Birds.

'Should an infectious pathogen spread, the ecological impacts could be even more devastating.'

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