

Gums, badgers, & economics ?

QUESTION

What impact will the disappearance of invader plants such as the blue gum have on nature, honey badgers, and honey production, and thus the economy of South Africa?
Question from Ankie Malan.

ANSWER

This many-faceted question does not have a simple answer, and has already generated much debate among beekeepers and conservationists. Exploring it illustrates the complexity that faces ecologists who are asked to advise on such issues.

Part of the answer is that gums trees (in the genus *Eucalyptus*, from Australia) are not set to 'disappear' (even if some people wanted them to). Gums form an important component of the forest industry and, at last count, they covered over 540 000 ha in formal plantations in South Africa. They are also found in many other plantations not captured by the forest industry's statistics, as well as in thousands of woodlots and other plantings across the country. A crude analysis of the extent of these non-forest-plantation gums in South Africa came up with a figure of 2.5 million ha in 1998. With the notable exception of Red River gum (*Eucalyptus camaldulensis*), however, gum trees are not exceptionally invasive and can be relatively easily controlled. Clearing efforts therefore aim to remove gums from specific areas only, such as along rivers where they use too much water, or in nature reserves where they compete with native biodiversity. Many hundreds of thousands, if not millions, of hectares of gums will remain a feature of our rural landscapes for a very long time.

The impacts of invasive alien plants on 'nature' are well documented. Suffice it to say that they are the second most powerful threat to native biodiversity after direct habitat destruction. However, the effect of removing gum trees – on honey production and on the South African economy – is also a complex one.

Honey production is a minor part of the story. The true value of managed honey bees lies in their use as pollinators of deciduous fruit orchards (mainly apples and pears). The deciduous fruit industry, centred in the Western Cape, is valued at around R3 billion annually. During the flowering season, beekeepers sell their pollination services to fruit farmers by moving hives into the orchards. Without

these services, annual fruit production would drop drastically – by R1.8 billion according to one estimate. When they are not pollinating fruit orchards, the bees spend up to 75% of the time foraging on gum trees. They are thus highly dependent on gums, and without these trees, the numbers of bees could become low enough to reduce deciduous fruit production very seriously.

A further complication is that the Cape honeybee (*Apis mellifera capensis*) has become an invasive pest in other parts of South Africa and beyond. In an attempt to limit the risk, beekeepers are not allowed to transport bees in or out of the Western Cape. It is therefore not an option, for example, to move bees to distant sites at times of the year when forage is scarce in the Western Cape. So the domestic bee population is 'captive' in this area, where it relies on gums for survival during the off-season. Removing the trees could therefore have significant economic consequences.

But care is needed when expressing economic impacts in terms of the value of the industry because there are alternatives to bee pollination. Hand pollination is possible, for instance, but more expensive, making profit margins lower, yet still potentially keeping the industry alive. Finally, if fruit production did become non-viable, the land could be put to other use, with alternative economic benefits. A sound economic analysis of the entire question would be needed to measure and understand all these trade-offs.

The effects of honey production on 'honey badgers' (*Mellivora capensis*) may at first seem beneficial, because badgers should profit from increased supplies of food in the form of bee larvae and honey from hives. In reality, however, badgers' predilection for feeding on the grubs of bees puts them in direct conflict with beekeepers, many of whom, unfortunately, kill badgers to protect their assets. The Endangered Wildlife Trust has initiated a campaign, supported by pressure from honey retailers and consumers, to label honey as 'badger friendly'. Leading

retailers such as Woolworths and Pick 'n Pay have committed themselves to selling only badger-friendly honey. To comply, beekeepers must use non-lethal means to protect their hives and are audited annually. The net effect of a honey industry (which depends on gums) on badgers is thus changing from negative (killing of badgers) to neutral (leaving them alone where they fend for themselves without affecting honey producers).

Considering the economic benefits of gums to South Africa as a whole, the question becomes even more complex. Besides their link to the production of deciduous fruit, they also confer significant advantage on South Africa's forest industry (half of which is based on gums) that produces timber valued at about R4 billion annually. This in turn is processed (as sawn timber or pulp), and supports exports valued at R9 billion per year. But forestry comes at a cost. Forest plantations use significant amounts of water – over 1 billion m³ per year – for which they are obliged to pay 'streamflow reduction' costs in terms of South Africa's water law; pulp mills also cause environmental pollution ... and so on. The net value of the forestry industry (in terms of benefits and costs) is a subject of ongoing debate, is often highly politicized, and deserves further study.

In the end, even if a question such as the one asked here seems simple enough, there are no simple answers. The options that we finally settle for represent a compromise that society has to make. Scientific examination of such issues, within a framework of ecological economics, is becoming more and more important in providing sound operational solutions. □

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