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The living and non-living environment: Spaceship Earth



Box 21.16 Case study: Swamp stonecrop

Swamp stonecrop¹⁰⁴ was brought into Britain as an aquarium plant. It wasn't long before it appeared in the wild. It forms carpets, with 100% coverage, over ponds and waterways and kills off all competing wildlife. It is a major threat to British aquatic life.

The herbicides that would deal with swamp stonecrop have been banned for use except under (rather expensive) licence. Removing this weed by mechanical means does not work. In the meantime the birds are spreading it exponentially. . .



Box 21.17 Case study: Madikwe Game Reserve

Near the border with Botswana, in the shadow of the Dwarsberg Mountains, is the fourth largest game reserve (75,000 hectares) in South Africa. There are 16,000 mammals with 95 different species in Madikwe, thanks to Operation Phoenix, the largest reintroduction of game ever undertaken in Africa.

This involved the relocation of entire breeding herds of elephant, buffalo, rhino, hyena, wild dog and various species of antelope.

At least 340 bird species, 54 reptile species, 20 frog species and many spiders and insects have been recorded in the park since 1992. All the 'big five' (elephants, lions, buffalo, rhino and leopard) can be found, together with the cheetah, and the wild dog (a huge success story for Madikwe).

The reserve constantly monitors all the components of its ecological systems (flora, fauna, fire, hydrological processes, erosion, etc.) to ensure it is successfully managing the reserve in accordance with its aim to ensure the continuation of the biodiversity in the area.

An important part of this is its wild-life based tourism, which is believed to be the most cost-beneficial option for achieving the aims of the reserve.¹⁰⁶



Box 21.18 Case study and activity: Group discussion

In 2010 Dr Craig Venter was the first to create artificial life by means of synthetic biology. 'Synthia' was created after Venter produced a 'minimal organism', one from which all unnecessary genes had been removed to produce a 'chassis' on which to build a new genome. Venter then introduced the synthetic chromosome into a cell from which the existing one had been removed.¹⁰⁸

Dr Venter hopes that Synthia will eventually help us turn algae into clean energy, be instrumental in developing vaccines, or help remove pollution from the oceans.

In response to those who fear that Synthia might replicate and run amok, he has inserted a 'watermark' so all such organisms can be traced to their source. It should eventually be possible to insert a 'destruct' code into Synthia and her progeny so they would not survive outside a given habitat.

Participants should familiarise themselves with the arguments for and against the creation of Synthia and then discuss the following questions:

This house believes that only God should create life.



Figure 21.5 Dr Craig Venter. © Volker Steger/Science Photo Library.