Traditional management of the land

***Assess ways that Aboriginal and Torres Strait Islander peoples' cultural practices and knowledge of the environment contribute to the conservation and management of sustainable ecosystems***

## *DEFINITIONS*

**Sustainable:** Development that meets the needs of people today without limiting the ability of future generations to meet their needs.

**Conservation:** Careful management and use of resources to assure continuing availability in the longer run.

**Assess**: Make a judgement of value, quality, outcomes, results or size. This means that your response should include the following:

1. Identify the Cultural Practice and Knowledge
2. Explain the Practice and how it maintains sustainable ecosystems
3. Make a judgement of the significance of this practice – outstanding or reasonable or poor

***1. Watch the film clips below, then read the passage and answer the questions.***

<http://splash.abc.net.au/media/-/m/29925/management-of-the-northern-savanna> (2 minutes)

<http://aso.gov.au/titles/documentaries/the-last-of-the-nomads/clip2/> (3 minutes)

<http://www.abc.net.au/landline/content/2013/s3767527.htm> (18 minutes)

Additional reading (optional): <http://austhrutime.com/fire-stick_farmers.htm>

**Firestick Farming: An Ancient Practice**The idea that we should protect our environment rather than just exploit it is a fairly new concept in Australia and most Western civilisations. Only recently have scientists realised that some civilisations such as Australian Aboriginals (and other indigenous populations) had the balance right between protecting and using the environment. Aboriginal people were living sustainably and conserving country *for over 40,000 years*.

Aboriginal people understood Australia’s low productivity (the soils are relatively infertile and the rainfall generally very low. These conditions do not support intensive agriculture without the help of synthetic fertilisers) and remained nomadic (moving about almost continuously), rather than settling to intensively cultivate one area of land. They were taught not to catch more food than they needed and each tribe had a totem animal that was not eaten (thus protected). They survived and settled expansive areas of Australia utilising firestick farming.

Firestick farming is an ancient Aboriginal land-management practice which involves using a mosaic (patchwork squares) of low-intensity fires. This technique is still used in the Top End to:

* Reduce high intensity (hot), late season, long burning catastrophic wildfires which kill wildlife, decrease biodiversity, and contribute to greenhouse gases.
* Increase early season, low-intensity (cool) fires to keep undergrowth low, reduce fuel loads and which burnt out quickly, putting fewer emissions into the atmosphere.
* Create MOSAICS of ecosystems at different stages of growth to support high biodiversity with unburnt sections acting as game reserves.
* Herd animals into an area for hunting, clearing walking trails of debris and snakes, discouraging and reducing insects and encouraging large herbivores into recently sprouted grasses after fire.

**Environmental Impacts** **of Firestick Farming**   
Over time, naturally changing climatic conditions, along with Aboriginal use of firestick farming, have transformed Australia’s ecosystems by:

1. Encouraging fire-resistant and fire-dependent plants. E.g. Eucalypts (epicormic growth), Banksia (seeds need smoke to open).
2. Changing the landscape from forested areas to grassland.
3. Potentially contributing to the extinction of Australia’s mega fauna.
4. Decreasing moist rainforest areas (some fragments remain in isolated, remote, high rainfall areas).

**Impact of European Arrival on Australian Ecosystems**European settlement has impacted far greater on the Australian environment in 200 years than the whole period of Aboriginal settlement previously. Some changes have been beneficial while most have been detrimental.

*Benefits:*

* Construction of artificial lakes where plants and animals can thrive.
* Gardens and parks, wildlife corridors and a system of National Parks and Wilderness Areas provide food, shelter and access to other areas for wildlife and aid in conservation.

*Detrimental impacts:*

* Deforestation (removal of vegetation)
  + Destroys the habitats of many native animals
  + Causes some plants to become extinct
  + Leads to erosion
  + Damages rivers and streams
  + Reduces amount of oxygen in the air
  + Results in salinity of soils and water
* Chemical use
  + Pesticides and herbicides which kill wild plants, insects and other animals.
  + Fertilisers which cause serious problems when they run off into rivers and streams.
* Irrigation which results in less water in rivers and streams and therefore damages aquatic habitats
* Desertification(loss of topsoil) through overgrazing and land degradation(mineral deficiency, reduced fertility, compacted soil with structure loss)
* Growing crops as a monoculture (single species crops) which increases pests and diseases
* Introduction of invasive species e.g. cane toad, lantana, rabbits, etc
* High stocking rates which lead to overgrazing of palatable species (herbs and grasses) and an increase in woody plant species
* Reforestation of grazing areas with woody plant species:
  + Reduces carrying capacity
  + Leads to catastrophic bushfires
  + Changes the structure of plant communities and causes loss of specific ecosystems
* Reduction in biodiversity and increased rate of extinction

While many impacts have resulted from our agricultural practices, people continue to threaten ecosystems in Australia by:

* Building new developments on the outskirts of towns and cities further destroying the habitats of plants and animals.
* Dumping litter, chemicals, oils, etc into rivers and bushland which damages any wildlife present.
* Burning fossil fuels (crude oil, natural gas, coal and peat) which causes:
  + Acid rain which in turn damages soils, plants and animals.
  + Climate change which is resulting in the Earth becoming warmer with greater fluctuations between hot and cold, the melting of icecaps and glaciers causing sea level rise and flooding in low lying areas, more extreme weather and loss of species.
* Reducing hazard burning in National Parks and Public land increasing catastrophic bushfires, which burn longer and hotter and result in loss of biodiversity over large areas.
* Mining for precious resources (which destroys ecosystems).

**For you to do:**

Q1: List the four principles of living sustainably that traditional Aboriginal Australians practiced.

Q2. Describe the main aim of firestick farming and the beneficial affect it had on burnt areas.

Q3: Outline the actual impacts on the ecosystem of firestick farming.

Q4: Outline the principles of European agriculture and development.

Q5. Outline the actual impacts on the ecosystem of European farming and development in Australia.

Q6: Firestick farming of unburnt mosaic sections have been compared to Game Reserves or National Parks. Explain how firestick farming aims to conserve ecosystems.  
Q7. Compare the farming practices of Aboriginal people with modern farming in terms of their conservation and sustainability. Look at inputs, outputs, impacts, biodiversity, land use/ownership, lifestyle and whatever else you can find in the above information.