S

93401R

NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Scholarship 2008
Geography

2.00 pm Thursday 20 November 2008

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Scholarship Geography 93401.

Check that this booklet has pages 2–21 in the correct order and that none of these pages is blank.

YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.

Towards Tomorrow: Environmental Change and Sustainable Development – Transformations and Connections

Physical and cultural processes bring change to places and can help explain patterns and distributions of geographic phenomena. There is a dynamic interrelationship between the physical and human worlds and this can result in tension between economic prosperity, social justice and environmental quality. Understanding these aspects of geography can help us imagine alternative futures and take action for a better and sustainable future world.

For copyright reasons, this resource cannot be reproduced here.
Source: http://www.getf.org/millennium/ev1.html

The way we see the world ... from a different perspective.

For copyright reasons, this resource cannot be reproduced here.
Source: David Suzuki, *A David Suzuki Collection* (Melbourne: Allen and Unwin, 2003).

Four Views of the Earth

A Vibrant Earth

We think of the Earth's crust ... in the most profound ways.

For copyright reasons, this resource cannot be reproduced here.
Source: Adapted from Tim Flannery, *Fragile Earth – Views of a Changing World* (London: Collins, 2006), pp 258–259.

Better Off Today

The future seems daunting ... with our threats.

For copyright reasons, this resource cannot be reproduced here.
Source: Adapted from Bjorn Lomborg *Fragile Earth – Views of a Changing World* (London: Collins, 2006), pp 248–249.

A New Epoch

A few years ago ... to where they are heading.

For copyright reasons, this resource cannot be reproduced here.
Source: Elizabeth Kolbert, Fragile Earth – Views of a Changing World (London: Collins, 2006), p 246.

For copyright reasons, this resource cannot be reproduced here.
Source: Stan Eales, *Isn't Progress Wonderful?* (London: Grub Street, 1991), p 69.

PART A: DEFORESTATION – LOSING FORESTS

Overview One

Forests are ... to forest destruction.

For copyright reasons, this resource cannot be reproduced here.
Source: *Fragile Earth – Views of a Changing World* (London: Collins, 2006), p 122.

Overview Two

It is a common notion ... is taking place.

For copyright reasons, this resource cannot be reproduced here.
Source: Michael Williams, Deforesting the Earth (Oxford: University of Oxford, 2006).

Original and Present Day Forest Cover: Deforestation and Trends

About half of the forest that was present under modern (ie post-Pleistocene Ice Age) climatic conditions, and before the spread of human influence, has disappeared (see map below), largely through the impact of people.

For copyright reasons, these resources cannot be reproduced here.
Source: http://www.fao.org/forestry/41256/en/

The Global Forest Resources Assessment 2000 Summary Report

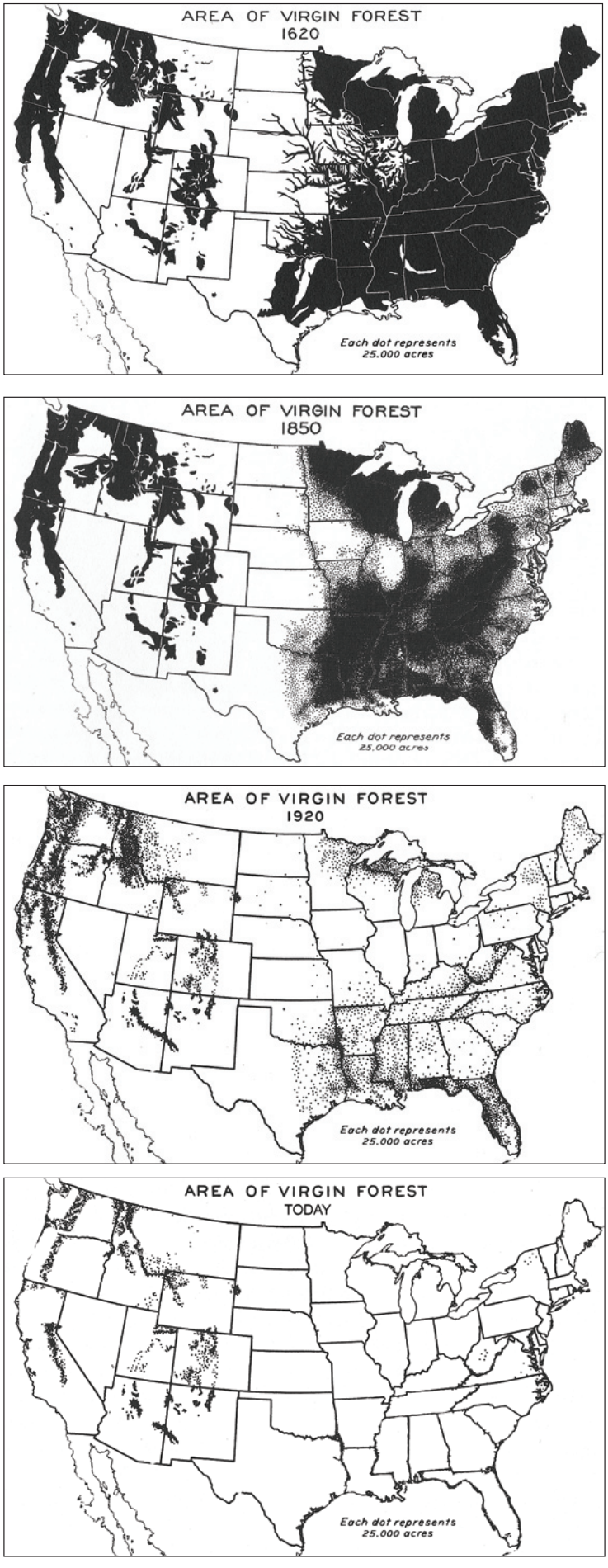
The 2000 assessment concluded that the world's forest cover at the year 2000 was about 3.86 billion hectares, or about 0.6 hectares per capita. Net deforestation at the global level was estimated at approximately 9 million hectares per year and gross global deforestation at approximately 13.5 million hectares per year. Net deforestation rates were highest in Africa and South America, whereas afforestation, through forest plantations, significantly offset the loss of forests in Asia. In contrast, the limited forest cover in industrialised countries remained essentially stable.

Territory Size: Proportion of Worldwide Net Forest Loss 1990–2000

For copyright reasons, this resource cannot be reproduced here.
Source: http://www.worldmapper.org/display.php?selected=108

For copyright reasons, this resource cannot be reproduced here.
Source: http://www.mongabay.com

Past and Recent Forest Losses



Source: http://www.wikipedia.org

(i continued) USA: How a Landscape Changes

Sketches showing 19th-century landscape change in western New York State: the scenes stand as a microcosm of landscape change almost anywhere in the temperate world, at almost any time in the last 300 years.

(1) The pioneers have been on the block for six months. They have cleared a patch to open out the forest and gotten logs for their cabin. Cows and sheep browse on whatever vegetation they can find. The nearest neighbour is miles away.

(2) After two years, more land has been cleared and fenced. Crops have been planted amongst the stumps. Neighbours have helped the pioneers clear more land beyond the cabin. The pair have their first child.

(3) Ten years on, and more forest has been cleared and the clearing is continuing. The fields are growing corn and grass. The log cabin has been expanded and a barn built. A small village is growing nearby (upper left).

(4) In this final scene, all the forest has been cleared by the family and their neighbours. The landscape is now a rural farming landscape. The farm house and other buildings have been rebuilt and expanded. A railway passes nearby.

For copyright reasons, the resources above cannot be reproduced here.
Source: Michael Williams, *Deforesting the Earth* (Oxford: University of Oxford, 2006).

(ii) What about New Zealand?

Early European settlers noted the remains of logs and charcoal scattered over much of the unforested tussocklands of the Canterbury Plains and Central Otago. Similar evidence of forest having been destroyed by fire was also noted in Hawkes Bay. Most early researchers were reluctant to ascribe the burning of such huge areas (almost half the original forest) to the activities of Polynesians. It was assumed that natural fires were the cause of the forest loss and failure to regenerate was due to climate changes since the last Ice Age.

For copyright reasons, this resource cannot be reproduced here.
Source: *Explorations in Human Geography: Encountering Place* (Auckland: University of Oxford Press, 1999), p 218.

Research since then has told a different story. There is general acceptance that forest or shrubland once covered most of New Zealand below the treeline. Radiocarbon dating has shown that most of the forest destruction of the whole eastern South Island took place within the last 1 000 years, that is, within the era of Polynesian settlement. It is now accepted that early Māori were responsible for the fires and that the fires were lit for a variety of reasons:

- to clear land for agriculture
- to drive moa so they could be more easily caught
- to allow bracken, the source of fern root for food, to establish
- to assist with cross-country travel
- to clear an area on which to build.

None of these activities by itself, however, reasonably accounts for the huge area over which forest was destroyed. The most likely conclusion is that, once the fires were lit they then got easily out of control. Once cleared of trees, the greater part of the forest land reverted to tussock grassland or scrub or fernlands. This is how the first Europeans found the country when they arrived some centuries later.

Once European settlement took place, the pace of environmental change accelerated. Forest burning took place to clear land for farming. Some early settler accounts tell of astonishment at the scale of their own destruction, and of how the sky would redden during a burn-off and then turn charcoal black, blocking out the sun for several days. As timber became valued for the spars and masts of ships and for building, further forest clearing took place. The native forest cover of the country was decimated.

In the 1 000 or so years since settlement took place in New Zealand, indigenous forest, which once covered most of the country, has been reduced to about 14 per cent of its original area.

For copyright reasons, this resource cannot be reproduced here.
Source: Graeme Stevens, *Prehistoric New Zealand*, (Auckland: Heinemann Reed, 1988), p 119.

(iii) Inside South America: Recent Trends

In a world of climate change ... newly cleared areas.

For copyright reasons, this resource cannot be reproduced here.
Source: The Guardian, 25 January 2008.

Burning Forests

Forest being cleared for cattle in Rio Branco, western Amazonia Brazil.

For copyright reasons, this resource cannot be reproduced here.
Source: *Fragile Earth – Views of a Changing World* (London: Collins, 2006), p 133.

(iii continued) South America: 30 Years of Change: 1973–2003

Iguacu Falls area of Argentina, Brazil and Paraguay 1973 (top) and 2003 (bottom).

For copyright reasons, this resource cannot be reproduced here.
Source: *Fragile Earth – Views of a Changing World* (London: Collins, 2006), pp 128–129.

Some of the most spectacular waterfalls in the world, the Iguacu Falls, lie at the junction of Argentina, Brazil and Paraguay. The isolation of this region gave rise to the unique Paranaense rain forest ecosystem, which supported thousands of species unique to the region. In the top satellite image, there is early evidence of deforestation, with patterns of tree felling following lines of communication. The bottom image, 30 years later, shows dramatic change. Vast areas of forest have been cleared for agriculture, particularly in Paraguay. This process has been accelerated by the construction of the Itaipu Dam (circled) on the Parana River in the 1980s and the creation of a huge reservoir behind the dam. Tourism developments associated with the Iguacu Falls have also added to pressure on the forest outside of protected Iguacu National Park area, shown in the southeast part of the image.

(iv) Logging in Malaysia: a Model for the Future?

Before the 1970s ... the oldest in the world.

For copyright reasons, these resources cannot be reproduced here.
Sources: David Waugh, *The New Wider World* (Cheltenham, UK: Nelson Thornes Ltd., 2003), p 238.
http://rainforests.mongabay.com/20malaysia.htm

Three Perspectives on Deforestation

Who's to Blame?

Consider what we industrialised Americans ... is virtually nil.

For copyright reasons, this resource cannot be reproduced here.
Source: Adapted from Leslie Taylor, *The Healing Power of Rainforest Herbs*, 2004.

Where's the Consistency?

"The West has already become rich by destroying its forests. They have now adopted hypocritical principles which they do not apply to themselves but which they insist in imposing upon us. Yet we are doing a better job of preserving our forests than they ever did."

– Malaysian Minister
for Primary Products

For copyright reasons, this resource cannot be reproduced here.
Source: Michael Williams, *Deforesting the Earth* (Oxford: University of Oxford Press, 2006).

PART B: COASTAL RECLAMATION – GAINING LAND

Overview

Two-thirds of the planet is covered by sea. Every year, more land is lost to the sea because of coastal erosion and sea-level rise. But in some places, people have created new coastal land. Coastal land reclamation has occurred over many years and in many parts of the world. In recent times, Japan, the southern Chinese cities of Hong Kong and Macau, and the city-state of Singapore in Asia have all responded to severe land shortages by reclaiming land for city expansion. In New Zealand, large parts of the CBD and wharf areas of Auckland, Wellington and Dunedin are built on reclaimed land. Modern engineering works that create artificial islands are also an example of land reclamation. Reclaiming land and creating artificial islands, are expensive and risky undertakings. It is often considered and actioned in places that are densely populated and where flat land is scarce. Land pressure is a driving force behind much reclamation. The Palm Islands complex in the United Arab Emirates is an example of a current artificial island development scheme. Critics of such "new land developments" criticise environmental disruption the schemes cause, and also point to threats that will be posed to the new low-lying land by projected future sea level rises.

The modern leaders in land reclamation have been the Dutch. The Netherlands is one of the most densely populated parts of the world. One-quarter of the land area of the Netherlands is below sea level. This land reclaimed from the sea is first surrounded by dykes to keep the sea out. The land is then drained and kept dry by pumping. This land is called "polder land". Land reclamation has been going on in the Netherlands since the 12th century. The largest polders are in the Ijsselmere, which is itself a large lake created in the 1930s by a dyke being built that cut it off from the open sea. Within the Ijsselmere is Flevoland, which is the world's largest artificial island: it is a polder nearly 1 000 sq km in size, built between 1950 and 1968.

For copyright reasons, these resources cannot be reproduced here.
Sources: http://www.american.edu/ted/ice/images4/212vm_Zuiderzeeworks.png
http://www.dlvplant.nl/media/018-windmolens_20zuid_20flevoland.jpg

Land Reclamation in Hong Kong: 1997 and 2003

For copyright reasons, this resource cannot be reproduced here.
Source: *Fragile Earth – Views of a Changing World* (London: Collins, 2006), p 88.

Hong Kong has been reclaiming land from the sea for more than 50 years to accommodate an ever-increasing population and expanding commercial activity. More than 10 per cent of the land area of Hong Kong is reclaimed land and Victoria Harbour is now only half the size it once was due to this reclamation. One of the most recent developments has been in West Kowloon, where land has been reclaimed for a variety of uses, including commercial, residential and recreational. In the lower image (2003), the road link to the new international airport, built on reclaimed land off neighbouring Lantau Island, can be seen entering the tunnel under Victoria Harbour.

Singapore: 2003

During the past four decades, Singapore has grown in land area by almost 20 per cent. "It is one of the fastest growing islands in the world" says Ng Cho Nam, associate professor of geography at the University of Hong Kong. Continuing reclamation, though, may be at a halt because neighbouring Indonesia has stopped selling Singapore the sand it needs to continue with its land expansion. Indonesia fears environmental damage from constant sand mining and also the way Singapore is redrawing its maritime borders with the new land it creates. Environmentalists are celebrating, saying that years of reclamation have devastated marine life and birds that sought refuge in the fragile mangroves, shoals and natural beaches that once ringed Singapore.

For copyright reasons, this resource cannot be reproduced here.
Source: *Fragile Earth – Views of a Changing World* (London: Collins, 2006), p 83.

Japan: 2003

The geometric shapes of reclaimed land contrast with the more irregular natural coastline of Osaka Bay on Japan's largest island, Honshu. Lack of suitable flat land for urban expansion has forced the Japanese to reclaim a large amount of land from the sea. Around Osaka Bay this new land is used mostly for commercial and port enterprises. Two new airports, Kobe and Kansai (white framed on the image), have been built in the bay on reclaimed land to avoid protests about airport development and airport expansion on land inside or on the edge of the urban areas.

For copyright reasons, this resource cannot be reproduced here.
Source: *Fragile Earth – Views of a Changing World* (London: Collins, 2006), p 89.

Dubai

Some of the most dramatic coastal reclamation and artificial island creation today is taking place along the coast of Dubai in the Middle East. This is all part of a radical modernisation and development model based on the theme of "Dubai … Where the Future Begins". In the last 30 years, Dubai has developed a Manhattan-style skyline, world-class port, huge duty-free shopping malls, and now a series of artificial islands are being made from material dredged from the Gulf shipping lanes. When completed, the islands will add 520 km to Dubai's coastline. This development is controversial.

The Price of Dubai's Artificial Future

From the air ... of natural currents.

For copyright reasons, this resource cannot be reproduced here.
Source: Tina Butler, "The Price of Dubai's Artificial Future", http://www.mongabay.com, 23 August 2005

Dubai continued

For copyright reasons, these resources cannot be reproduced here.
Source: www.thepalm.ae/

For copyright reasons, this resource cannot be reproduced here.
Source: *National Geographic*, January 2007, pp 104–105.