WEEK ONE

Climate Change and Threatened Species

This week students will:

1. Write a journal that explains their experience with the game and how it may have made them think about their personal actions.

2. Learn about different animal habitats and what are some of the different impacts and issues regions are facing.

3. Be encouraged to consider more sustainable energy choices at school or home.

4. Be encouraged to look at the links between human choices and environmental consequences.

Learning outcomes

Year 3
English ACELY1675, ACELA1479, ACELY1792, ACELY1682, ACELY1683, ACELY1684, ACELY1685

Geography ACHGK017

Science ACSHE051

Digital Technologies ACTDIK007, ACTDIK008, ACTDIP010

Year 4
English ACELA1498, ACELY1695, ACELY1696, ACELY1697

Geography ACHGK022, ACHGK024, ACHGS031

Digital Technologies ACTDIK007, ACTDIK008, ACTDIP010

Year 5
English ACELA1504, ACELA1512, ACELY1699, ACELY1706, ACELY1707

Geography ACHGK029, ACHGS039

Science ACSSU043, ACSHE217, ACSIS093

Year 6
English ACELA1522, ACELA1523, ACELY1716, ACELY1717

Geography ACHGS046

Science ACSSU094, ACSHE220, ACSIS110

The Game

There are a number of underlying global issues that Habitat the Game attempts to address through game play. Two of the main issues in focus are climate change and threatened species.

Throughout the game, in order to keep their bear alive, players have to log environmental actions they undertake in their everyday lives. If they do not log their environmental actions their bear will leave their virtual park. Allocate some time this week to become familiar with the game.

Materials required:

1. A tablet or smartphone (this could be one device shared between two players).

2. Habitat the Game installed on the device.

3. A journal.

Activity:

Write a daily journal sharing how you used Habitat the Game. What are some of the ways you have taken the game into your real life? What environmental actions do you or your family already do?

HABITAT

Week 1 — Threatened and Endangered Species

Habitat Loss

The impact of climate change is placing enormous pressure on the earth's fragile ecosystems pushing many of the earth's animals and plants close to extinction.

This century global warming is expected to be one of the greatest drivers of species extinction, particularly those species that have already declined due to other human causes.

Few species will be immune to the effects of global warming, but some are particularly at risk such as those in areas of higher than average warming (polar regions), those that cannot adapt and those whose populations are already too small to cope with rapid changes. A recent report by the International Union for Conservation of Nature (IUCN) suggests that up to 35% of birds, 52% of amphibians and 71% of reef-building corals have traits that are likely to make them particularly susceptible to climate change.

For species like orang-utans, tigers and whales, which have been at risk of extinction for decades, due to over-exploitation by humans and habitat loss, climate change threatens to put the final nail in the coffin. Threats like the widespread loss and fragmentation of habitat, illegal hunting and trade, and uncontrolled, unsustainable human development have already drastically depleted many species' populations worldwide. Six of the seven species of marine turtles are threatened or endangered, and one-third of

Australia and New Guinea's kangaroo and wallaby species are at risk of extinction. In combination with the existing threats, global warming will push some species over the edge unless drastic measures are taken now.

Predicting the effects of global warming is not an exact science. It relies on a combination of bioclimatic modelling and ecological knowledge. Bioclimatic modelling allows scientists to predict the potential impacts of climate change on the natural distribution of species. For many species it is unknown how – or if – they will adapt to climate change. Some adapt easily to their environment, while others are have very specific needs.

For species like orang-utans in Indonesia or Malaysia and African elephants, food shortages as a result of changed rainfall patterns may be one of the first signs of climate change. In the dwindling Indonesian forests where orang-utans live, the frequency and intensity of flooding and wild fi res are predicted to increase in wet and dry seasons respectively, changing the life cycles of their food plants and nesting trees and reducing food supply. Coupled with widespread logging of their habitat and illegal hunting and capture of orang-utans, the combination could be the final blow. In sub-Saharan Africa, extreme weather events such as droughts are predicted to become more frequent and intense.

Some climate projections suggest that 20% of the protected areas in which African elephants live may no longer be suitable for them by 2080, including possibly national parks like Kruger.

For other species the effects of climate change are already being felt as their environments respond to global warming. Populations of polar bears and Emperor penguins at the north and south poles respectively are beginning to decline due to the loss of vital sea ice, which is essential for their survival. The loss of sea ice edges, which provide important foraging grounds for many whale species, is reducing the krill populations on which many species rely for food. Other important food sources for whales such as squid may be affected by rising levels of ocean acidity as a result of global warming. Some coral reefs have almost been destroyed by the bleaching events caused by global warming in the latter part of last century, and such events are predicted to grow more severe and frequent in the future.

In Australia, warmer temperatures on Macquarie Island have fostered

favourable conditions for non-native feral rabbits and rats, which are destroying the nesting sites of rare Albatross. On some beaches in northern Australia and in Latin

America, marine turtles are producing more female hatchlings than male. It suggests global warming is already affecting this species as sex determination for marine turtles is based on nest temperature. In the Sunderbans of India and Bangladesh, which contain the only population of tigers living in mangrove swamps, the sea level is rising rapidly, threatening to engulf the limited amount of tiger habitat that is left on land.

A changing climate will change the geography and in some cases, biology of certain species, so existing measures put in place to conserve them may no longer be enough. For example, higher temperatures may force some species to move outside of protected areas established specifically for them. Climate change will also change human behaviors. Sea level rises and the need for alternative fuel sources will increase competition for land, placing greater pressures on the habitat of some species.

It is not too late to turn the tide of extinction around, but there is no time to waste. If we want to share our future with tigers, turtles and polar bears, urgent action is needed to reduce greenhouse gas emissions globally. Simultaneously, steps must be taken to increase the resilience of ecosystems to climate change by reducing all other threats to species, allowing them to adapt to the changes in their habitat. (WWF Climate Change and species, author Dr Tammy Matson)

 http://wwf.panda.org/about_our_earth/species/problems/climate_change/

HABITAT