БІОЛОГІЧНІ НАУКИ. ЕКОЛОГІЯ.

THE PROBLEMS OF CLIMATE CHANGE IN WORKS BY SCIENTISTS AT THE ROYAL BOTANIC GARDENS, KEW

Baevska Irina, student of Faculty of Science Education and Ecology
Pet'ko Lyudmila, Ph.D., Associate Professor
(Dragomanov National Pedagogical University, Kyiv, Ukraine)

Fig. 1. Syria (2016).

Fig. 2. Mexico (2018).

Fig. 3. Arisona (USA), 2018.

Historical climate change has had a profound effect on current biogeography, so we can expect our ongoing and rapid climate change, to have as great an effect. Climate change has important implications for nearly every aspect of life on Earth, and effects are already being felt.

Temperature effects – average, minimum or maximum can be important determinants of plant distributionFor example the Palmae/Arecaceae are cold intolerant as their single meristem is susceptible to frost (Fig.1−3).

Rainfall is also an important determinant: for example it affects the balance of grasses to woody vegetation.

Other factors such as soil type (Fig. 4) or herbivory may also be affected by climate change (*http://www.bgci.org/policy/climate-change-and-plants/*).

Over the last 257 years, Kew has explored every corner of the world, gathering knowledge and information about plants and their habitats.

Kew's scientists show in their researches how climate change is threatening ecosystems across the globe. Our natural world is damaged, livelihoods across the world will suffer, access to food and water will dwindle and we will lose precious species. At Kew there are 31,000 plant species have a known use to us – as food, fuel, clothing or medicine [11].

Kew's Millennium Seed Bank partnership is celebrating collecting,

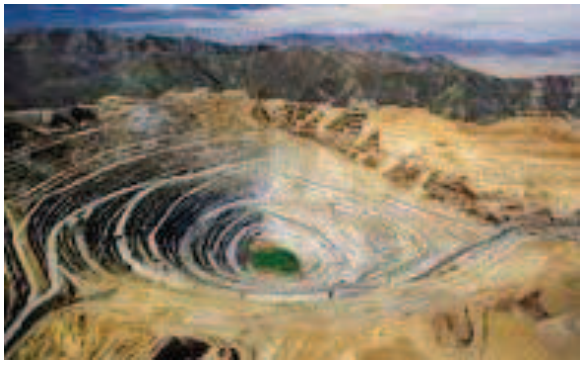

Fig. 4. Resource Depletion

Fig. 5. Wild banana (Musa itinerans).

banking and conserving 10% of the world's wild plant species by banking its 24,200th species – a pink, wild banana from China (*Musa itinerans*) is a wild banana species and closely related to edible banana cultivars. Its pink to light purple fruits are an important staple food for the wild Asian elephants (*Elephas maximus*) and other wildlife in the tropical jungles. Its young flowers and pseudo-stem is a popular dish found at local restaurants in Southwest China and adjacent regions. It is an invaluable genetic resource for the tropical fruits industry and is a conservation pr iority for its food security value.

Musa itinerans, which, amongst other things, is increasingly under threat in the wild due to its jungle habitat being cleared for commercial agriculture, was collected in Southwest China by Kew 's local Millennium Seed Bank partner, the Kunming Institute of Botany, Chinese Academy of Sciences. *(http://www.bgci.org/news-and-events/news/0638/)*

Elephants eat roughly 10 percent of their bodyweight in food every day. It is about 360 kg! Elephant's menu comes to: Bana Grasses 30kg, Banana Trees 30kg (see [12]), Watermelons 30kg, Cucumbers 30kg, Bananas 30kg, Pumpkins 30kg, Yam Beans / Sweet Potato 30kg, Corn 30kg, Pineapples 30kg, Papaya 30kg. Total – 360 kg *(https://blog.nationalgeographic.org/2016/02/02/how-much-food-does-a-thai-elephant-eat-in-a-day/)*

Director Kew, Richard Deverell on Kew's commitment to minimise the impact of climate change writes that that biodiversity is collapsing. Increased water levels and high temperatures cause significant changes in the environment. Scientists Kew in their studies are confronted with plants that are close to extinction, due to diseases that adapt faster and affect yield. Unfortunately, scientists do not know much about the impact of these changes on human life, is most dependent on these changes. Severe weather events are forcing people out of their homes, pressuring strained resources and inflaming regional fragility [8].

On the broadest scale, the rate at which energy is received from the Sun and the rate at which it is lost to space determine the equilibrium temperature and climate of Earth. This energy is distributed around the globe by winds, ocean currents, and other mechanisms to affect the climates of different regions.

Factors that can shape climate are called "climate forcings" or "forcing mechanisms". These include processes such as: 1) variations in solar radiation; 2) variations in the

Earth's orbit; 3) variations in the albedo or reflectivity of the continents; 4) atmosphere; 5) oceans; 6) mountain-building; 7) continental drift; 8) changes in greenhouse gas concentrations.

According to the Intergovernmental Panel on Climate Change (IPCC), the temperature on the planet has already increased by almost 1 ° C since the start of the industrial revolution. If humanity keeps current greenhouse gas emissions, then global warming can reach + 4C or more over the next 80 years [10].

Fig. 6. A coffee farm in Ethiopia.

Scientists-researchers Kew explore regions such as tropical forests or meadows, how they react to climate change. The interconnection of plants and their impact on the ecosystem, reduction of natural resources and changes in the life of the population are studied in detail.

For example, the scientists conducted a project, in Ethiopia, on to prevent the effects of climate change and low yields, which force many coffee farmers to cut down forests and grow coffee in a sustainable way [11]. The Fig. 6 shows Dr Aaron Davis and Dr Tadesse Woldermariam Gole (Environment and Coffee Forest Forum, Ethiopia [9]), setting up climate recording equipment in a coffee farm in south-east Ethiopia.

Thus, we can say with certainty that climate change affects not only the environment, but also the social and economic aspects of human life. These challenges will face us in our future teacher's profession [1; 2; 3; 4; 5; 6; 7; 13; 14].

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