DOWNLOAD PDF GLOBAL WARMING EFFECTS ON ANIMALS

Chapter 1 : Climate change - effects on animals

Impact of Global Warming on Animals Animals are essential to maintain the circle of life and the food chain. It is just not the animals, but insects, reptiles, and aquatic animals are all interdependent on each other, and even on plants and humans.

Solutions Land Rising temperatures and shifting precipitation patterns are changing the geographic areas where mammals, birds, insects, and plants that live on land can surviveâ€”and are affecting the timing of lifecycle events, such as bud bursts, leaf drop from trees, pollination, reproduction, and bird migration. See how global warming threatens wildlife in Etosha National Park in northern Namibia â€”and find other hot spots where plants and animals are at risk on the Climate Hot Map. Forced migrations and extinctions. Plants and animals are migrating to higher altitudes and latitudes. Land-based species that already live in extreme habitatsâ€”such as plants and animals found only in alpine regionsâ€”may become extinct because they literally have no place to go, while other shrubs and boreal trees encroach on the warming tundra. Plant-hardiness zones are shifting as formerly low-latitude plants survive at higher latitudes. Increase in agricultural pests. Agricultural pests formerly constrained to low-latitude locales are moving to higher latitudes as those regions warm. And some pests are reproducing more often as warm seasons last longer. In the now beetle-infested forests of the Kenai Peninsula of Alaska, for example, the pine bark beetle often completes two or three reproduction cycles per year instead of only one. Desynchronization of life-cycle events. Many formerly synchronized life-cycle events are now out of whack. For example, bird migrations timed to seasonal changes or temperatures may begin earlier. And these birds may find that the insects and other creatures on which they feed along migration routes are not available. Meanwhile warmer temperatures in late winter may force flowers to bud early, leaving them vulnerable to late-season frost. Many tree species are adapted to particular temperature and moisture conditions. As these conditions change, habitats become unsuitable for saplings to grow, and species attempt to migrate. Because trees are so long-lived, the effects may not be noticeable for many years. However, species that now grow only in certain areasâ€”such as the sugar maple, now found in parts of the United States and Canadaâ€”may be quite rare in their southern range by the end of this century. Increase in allergens and noxious plants. Rising concentrations of CO2 in the atmosphere act as fertilizer to many plants. These changes may stimulate growth in certain crops, trees, and weedsâ€”at least under moderate temperature increases as the climate warms. Some potent allergens and noxious plants, such as poison ivyâ€”to which roughly 80 percent of people are allergicâ€”seem to especially thrive in warm and CO2-rich conditions.

Chapter 2 : Global Warming Effects and Causes: A Top 10 List

The key impact of global warming on wildlife is habitat disruption, in which ecosystemsâ€"places where animals have spent millions of years adaptingâ€"rapidly transform in response to climate change, reducing their ability to fulfill the species' needs.

For a long time, it had been debated how much of the warming trends being observed in the Arctic region are attributable to industrialization. But in the recent years there has been mounting evidence indicating that global warming is indeed happening for man-made reasons. Global warming presents us with a scenario of gradually escalating crisis, which can eventually, and literally, sink our world â€" through the melting of polar ice caps. The arctic polar ice cap is melting and has thinned by over an astounding 45 percent in the last four decades Jacobsen and Riebel Global warming has already begun to devastate ecosystems, flora and fauna, biodiversity, in diverse regions all over the globe. The extremes of weather conditions that are at present causing havoc in the United States, Europe and elsewhere, and posing graver dangers in the future, are a direct consequence of global warming. However, since the effects of global warming are much more pronounced in the Arctic than in other parts of the world, its impact is much more direct and obvious there. The Arctic is extremely vulnerable to the ongoing and predicted climate changes and its impacts. The reduction in sea ice is almost certain to have devastating impact on polar bears, ice-dependent seals, as well as the local populations for whom these animals are the primary source of food Hassol and Corell The polar bear could very well be our canary in the coal mine. And this coal mine could prove to be a dark abyss that can spell the doom not only of countless species of plants and animals of our world, but ultimately humanity itself. Global temperatures are slowly but steadily rising, largely owing to air pollution from the burning of fossil fuels. Global warming is caused by an increase in certain compounds, such as methane and carbon dioxide, which accumulate in the atmosphere. The rising temperatures are warming the oceans, which makes the water expand and so raises sea levels. Sea ice is melting and now covers considerably less of the Arctic Ocean than it did thirty or forty years ago. Melting sea ice would affect the circulation of deep water currents and affect the temperature of warm surface currents, such as the Gulf Stream in the Atlantic Houghton One change would lead to another in a series of cascading chain events. These changes are expected to have dramatic effect on the climate of nations across the globe, and already are showing significant disturbing indications. There are also clear signs that, as the Arctic and Antarctic regions warm up, the land ice there, existing in the form of ice sheets and glaciers, is melting. This added water will cause sea levels around the world to rise sharply, and flood coastal areas Tennesen The Arctic is experiencing some of the most rapid and severe climate change on Earth. The impacts of climate change on the region and the globe are projected to increase substantially. The Arctic is really warming now. Emerging from the work of scientists, the ACIA presents a very alarming situation that is a consequence of the present and expected global warming on Arctic ecosystems. The climate is in fact changing at an accelerated pace in the Arctic region, as compared to the rest of the world. In the past few decades, temperatures in the Arctic have risen at nearly twice the rate as in the rest of the world. Some areas in the Arctic have warmed 10 times as fast as the world as a whole, which has warmed an average of 1 degree Fahrenheit over the past century. In the past 50 years, average yearly temperatures in Alaska and Siberia have increased by about 16 degrees Fahrenheit, now hovering around minus 15 degrees Fahrenheit Associated Press The impact of these climate changes is expected to aggravate drastically over the next century, contributing to major physical, ecological changes, many of which have already begun. Arctic summer sea ice is currently melting at an alarming rate of 9. According to scientific estimates, the waters of the Arctic could become ice-free for several months a year in less than a century Associated Press This climate change will affect the people, wildlife, and environment of the Arctic Ocean in a much worse manner than air pollution, waste, overfishing, and oil exploration. Animals Being Driven Towards Extinction As sea melts, Arctic animals, such as the polar bear, will lose their habitat. Currently, about 20, to 30, of these animals exist, but as the ice-free period gets longer and longer, the window of time when polar bears can hunt for food would become shorter and shorter Deshayes Polar bears are entirely

dependent on the ice platform for hunting and breeding. Eventually, the ice period is going to get too short for polar bears to get enough food, and that time does not seem to be far away at all, if the present global warming trends continue unabated. In the worst case scenario polar bears, walrus, some species of seal, and many other polar animals could be actually extinct within a few decades because of the effects of global warming Klapper This is very likely to have devastating consequences for some Arctic animal species â€¦ and for the local people for whom these animals are a primary food source. Should the Arctic Ocean become ice-free in summer, it is likely that polar bears and some seal species would be driven toward extinction. The breeding area for birds and grazing area for animals are going to continuously dwindle away so that many currently threatened species would become extinct and even those species that are in adequate numbers today would be driven to the verge of extinction. This is a seriously alarming prospect. However, even if the current meltdown is not going to be such an ecological disaster which could spell the end of polar bears and many other Arctic animals, Arctic polar bear populations would definitely decline in alarming numbers in the coming 30 to 50 years. There is going to be a severe crisis situation for many other species dependent on the ice, such as the ringed seal, bearded seal and little auk. More than half of the Arctic region is essentially ocean. Marine animals are particularly vulnerable to climate variations. Moreover, a significant proportion of all Arctic life forms rely either directly or indirectly on the bounty of the sea. Climate related changes could decimate sea-based life forms, and could indirectly have devastating effect on the birds and land animals which may subsist on the diet of these vanishing oceanic forms of life. For example, it has been observed in in the Barents Sea that a climate-related collapse of capelin resulted in havoc for the many seabirds that breed in this area. The important point to note here is that the death or disappearance of one species may easily lead to the extinction of another species in the tightly-knit and delicately balanced ecology of the Arctic. Impact of Global Warming on Individual Arctic Species Species diversity is low in the Arctic, and decreases rapidly from the boreal forests to the polar deserts of the extreme north. The diversity of arctic animals is very similar to that of plants. Due to the extreme weather conditions, primitive species thrive in greater numbers than evolutionarily advanced species. Arctic animals are generally so well adapted to their environments that they generally tend to be slow to show any reaction to the heightened weather changes ACIA The Arctic has always experienced cycles of severe weather changes as part of a phenomenon known as Arctic Oscillation, and Arctic animals are remarkably adapted to withstand dramatic fluctuations in temperatures and all the associated climatic vicissitudes, especially the melting of ice. Nonetheless, the nature and degree of human-induced climatic changes currently underway in these northern extremes of the globe are presenting unprecedented challenges to the Arctic ecosystems Cone Species inhabiting northern regions are becoming particularly sensitive to global warming, while at the southern ranges many species are becoming susceptible to biological incursions of extraneous species. As the pace of global warming accelerates, forests will crop up in the southern parts of the Arctic, thereby pushing the frozen tundra landscape â€” and its wildlife of caribou, arctic fox, ptarmigan and insects â€” further north. Forested areas are spreading northward. In the Nordic regions, birch trees are taking over traditional reindeer lichen pastures, as a result of which the reindeer now have to compete with elk and red deer moving north. These shifts have sometimes caused no significant negative impact. But in other cases, they have made survival tougher as competing species come into contact with each other, for example, the competitively superior red fox is pushing the arctic fox farther towards the sea. Polar bears are at the top of marine food chain in the Arctic. One of the key findings of ACIA report is that the deleterious effects of pollution and contaminants in the diets of polar bears are compounded with the starvation caused by dwindling hunting grounds. Polar bears accumulate significant levels of toxic elements from eating ringed seals who have absorbed these chemicals by eating contaminated species lower in the food chain. However, normally, the bears have the capacity to store such poisonous substance in their fat reserves and not let them affect their health. But due to the poor feeding seasons that are becoming a commonplace for these animals, their fat reserves are melting, thereby causing these toxins to be released into their bodies. Poor fat reserves in female polar bears also adversely influence their reproductive success. Further, lack of food would also imply lack of energy for these Arctic creatures to hunt successfully and feed their young. Thus, changes in ice extent and stability are militating against the very survival of polar bears as a species from many fronts. Even if they are

somehow able to survive the persisting present trend of later formation of sea ice in autumn and earlier break-up in spring, the polar bears are highly unlikely to outlast the complete loss of summer sea ice-cover which is expected to happen in less than hundred years. It is theoretically possible for these animals to radically change their summer life-styles and live as land-based animals for several months during a year, but practical considerations such as competition from other well adapted species and hunting down by man make their extended survival a very precarious proposition ACIA Scientists believe that global warming will cause more ice storms in the Arctic. If that happens, prey animals will suffer. In , scientists believed there were more than 24, Peary caribou in the Arctic. Today they think there are fewer than 2, It is thought that a bad ice storm in killed many caribou and musk oxen. If there are going to be many such instances of bad storms in the future, all the Arctic animals would be in serious trouble. Caribou in certain regions of northwest Canada and Alaska are drowning as they cross rivers that normally are still ice when the animals migrate. Warming has also interfered with caribou feeding. Repeated freezing and thawing creates a crusty layer on the ground that makes it difficult for the caribou to reach the lichen on which they depend for their food ACIA Ringed seal, ribbon seal, and bearded seal, spotted seal, harp seal and such Arctic seal species lead a totally ice-dependent life style. Ringed seals are likely to be the most highly affected species of seal because all aspects of their lives, such as breeding, foraging, and shelter are tied to sea ice. Adapting to life on land in the absence of summer sea ice seems a very difficult likelihood for the ringed seal as they rarely, if ever, come onto land. Only a few seal species such as harbour seal and grey seal would be able to survive and expand their ranges in an Arctic that is becoming less and less covered with ice ACIA Certain species of birds are particularly liable to be negatively impacted by the thinning of sea ice. The ivory gull, for example, leads an existence that is intricately intertwined with sea ice, whether it is for the purposes of nesting or breeding or for shelter and protection. For walrus in many areas of the Arctic, the ice edge provides a optimal habitat for resting and feeding, because walrus eat clams and other shellfish on the continental shelves. However, as the ice edge retreats away from the shelves to deeper areas, clams would be hard to come by for the walrus. Also, disappearance of sea ice would imply that walrus may not be able to travel long distances on floating ice searching for feed over a wide area ACIA Conclusion We have been able to examine the impact of global warming on the animal and bird species of the Arctic only at a cursory level. A deeper examination of the scenario presents us with much more complex and direr prospects. But the message that comes out of even a superficial investigation of the worsening environmental and ecological situation in the Arctic is clear: If we do not take drastic measures to reverse global warming trends soon enough, the situation is likely to go completely out of hand. All the nations of the world have to collectively take up a commitment to keep the global temperatures down by cutting down on their emission levels of greenhouse gases. Failing which, we seriously jeopardize the very future of this planet. It is not just about plants, animals and birds anymore. The issue at stake here is not just biodiversity, or ecological health, or environmental safety etc, but the very survival of human race. Tomorrow the polar bear may become history, but the day after we humans may be relegated to the long list of extinct species. Cambridge University Press Associated Press.

Chapter 3 : Effects of global warming - Wikipedia

Climate Change - effects on animals, birdlife and plants. Our climate is changing, both naturally and due to human exploitation. There is already undeniable evidence that animals, birds and plants are being affected by climate change and global warming in both their distribution and behavior.

Check new design of our homepage! Unexpectedly Bizarre Effects of Global Warming on Animals Harmful impact of global warming on life on Earth is a known, undisputed fact. Global warming affects us all. Its effects on animals will have serious repercussions on the entire life cycle. Therefore, it is high time we humans realize our responsibilities towards our planet and take steps to protect it from ill effects of global warming. Feb 19, To get a better understanding of global warming, it is important to understand the greenhouse effect. Greenhouse gases help to keep the Earth warm, and this is the reason why life on Earth has existed, and still thrives. Besides humans and plants, global warming effects on animals is a cause of concern. Impact of Global Warming on Animals Animals are essential to maintain the circle of life and the food chain. It is just not the animals, but insects, reptiles, and aquatic animals are all interdependent on each other, and even on plants and humans. Loss of Habitat As global warming causes climate change, many great deserts like the Sahara, are no longer able to sustain their animal population. Loss of habitat is most vividly seen in the Arctic, where global warming is melting the glaciers, pushing the polar bears into extinction. The melting glaciers have caused water levels to rise in many oceans, threatening to drown many tropical islands and forests, that teem with animal life. The Gulf war oil spills, along with oil tanker spills, have devastated a large number of aquatic life. The pictures of dead fishes covered in oil on many beaches, is a sad reflection of the future that lies in store for them. Changes in weather patterns and coastlines affect the food patterns of most aquatic creatures. Grasslands are also adversely affected by global warming. The effects include; high rate of evaporation, higher temperatures, frequent and severe droughts, reduced rainfall, and lower nitrogen content in forage grasses. Lower nitrogen concentration in the vegetation causes improper digestion in animals resulting in reduced strength, performance and health of animals. Loss of Food Grasslands are adversely affected by global warming. To make room for an ever-growing population, many forests, grasslands, and even deserts, have been made habitable for humans. Rainforests and grasslands support many life forms; they are home to tiny insects as well as mighty, grizzly bears. When forests are cleared out to develop more land for domestic constructions, industrial reasons, and farming, most of these animals have to adapt themselves to live in shrinking areas, where everything is less; food, water, hunting and breeding grounds. Loss of habitat renders these animals vulnerable to being hunted down, either in their own little space, or when they come close to human habitats searching for food. With deforestation, many trees and other plants, that provide food to herbivorous animals no longer exist, causing death due to starvation and malnutrition. This in turn has taken its toll on all other omnivorous and carnivorous animals too, making the entire animal life susceptible to extinction. Many animals, domestic or wild, who venture into the human habitat for food, eat from the garbage, mostly picking up plastic, rusted metal or contaminated food. This too has a devastating effect on their health. Altered Hibernation, Breeding, and Migration Patterns Studies indicate a change in the hibernation, breeding, and migration patterns of animals. This unhealthy pattern affects the newborn, and quite a few are now born with defects, or are stillborn. Early egg laying is one of the reasons why insects like butterflies, and small birds, are disappearing fast in North America, where higher temperatures lead to earlier spring seasons. Many animals and birds, including penguins or flamingos, travel long distances to warmer climates, for breeding purposes. Devastation of the migratory routes and their habitat, has forced many of them to alter their routes or do not migrate at all. This forces them to seek alternative migration habitats, where they have to compete for food and shelter with other migratory or resident animals and birds. The same is also happening in case of aquatic mammals, who prefer warmer waters for breeding and hibernation. Animals that migrate depending on seasonally linked phenomena, such as the formation of ice, lakes and other water bodies, and the availability of seasonal foods also suffer when the environmental conditions around their migratory destination changes.

Chapter 4 : Plants, Animals, and Ecosystems | A Student's Guide to Global Climate Change | US EPA

All over the planet, scientists have observed the effects of climate change on the natural world - flowers are blooming earlier, animals are breeding earlier, and ranges of plants and animals are changing size and shape.

Attribution of recent climate change In this article, " climate change " means a change in climate that persists over a sustained period of time. Changes in climate may be due to natural causes, e. Detection does not imply attribution of the detected change to a particular cause. NASA GISS The graph above shows the average of a set of temperature simulations for the 20th century black line , followed by projected temperatures for the 21st century based on three greenhouse gas emissions scenarios colored lines. This projection is relative to global temperatures at the end of the 20th century. Global surface temperature for the past 5. The last , years are expanded in the lower half of the figure image credit: Physical impacts of climate change Seven of these indicators would be expected to increase in a warming world and observations show that they are, in fact, increasing. Three would be expected to decrease and they are, in fact, decreasing. Each of the different colored lines in each panel represents an independently analyzed set of data. The data come from many different technologies including weather stations , satellites , weather balloons , ships and buoys. Some of the graphs show a positive trend , e. Other graphs show a negative trend, e. Evidence of warming is also apparent in living biological systems. With medium confidence see footnote 1 , IPCC [58] concluded that human influences had contributed to an increase in heavy precipitation events at the global scale. Projections of future changes in precipitation show overall increases in the global average, but with substantial shifts in where and how precipitation falls. Extremely hot nights have doubled in frequency. The area in which extremely hot summers are observed, has increased fold. These changes are not explained by natural variability, and attributed by climate scientists to the influence of anthropogenic climate change. Heat waves with high humidity pose a big risk to human health while heat waves with low humidity lead to dry conditions that increase wildfires. The mortality from extreme heat is larger than the mortality from hurricanes, lightning, tornadoes, floods, and earthquakes together [65] See also heat wave. Tropical cyclones At the global scale, the frequency of tropical cyclones will probably decrease or be unchanged. Some impacts will be beneficialâ€”e. Retreat of glaciers since A map of the change in thickness of mountain glaciers since Thinning in orange and red, thickening in blue. A map that shows ice concentration on 16 September , along with the extent of the previous record low yellow line and the mid-September median extent black line setting a new record low that was 18 percent smaller than the previous record and nearly 50 percent smaller than the long-term â€” average. The cryosphere is made up of areas of the Earth which are covered by snow or ice. Assuming high growth in greenhouse gas emissions SRES A2 , some models projected that Arctic sea ice in the summer could largely disappear by the end of the 21st century. Effects of global warming on oceans The role of the oceans in global warming is complex. The oceans serve as a sink for carbon dioxide, taking up much that would otherwise remain in the atmosphere, but increased levels of CO 2 have led to ocean acidification. Furthermore, as the temperature of the oceans increases, they become less able to absorb excess CO 2. The ocean have also acted as a sink in absorbing extra heat from the atmosphere. Ongoing effects include rising sea levels due to thermal expansion and melting of glaciers and ice sheets, and warming of the ocean surface, leading to increased temperature stratification. Other possible effects include large-scale changes in ocean circulation. Ocean acidification This map shows changes in the amount of aragonite dissolved in ocean surface waters between the s and the most recent decade â€” The uptake of human carbon emissions since the year has led to an average decrease in pH of 0. The effects of ocean acidification on the marine biosphere have yet to be documented. Oxygen depletion The amount of oxygen dissolved in the oceans may decline, with adverse consequences for ocean life. Future sea level Trends in global average absolute sea level, â€” Between and , the rate increased above the previous period to 3. Authors of IPCC AR4 SYR [24] were uncertain whether the increase in rate from to was due to natural variations in sea level over the time period, or whether it reflected an increase in the underlying long-term trend. There are two main factors that have contributed to observed sea level rise. The major store of water on land is found in glaciers and ice sheets. Cited studies suggested a

great deal of uncertainty in projections. There is variability both year-to-year and over longer time scales, with global ocean heat content observations showing high rates of warming for â€”, but some cooling from to Regional effects of global warming Temperatures across the world in the s left and the s right , as compared to average temperatures from to Some are the result of a generalised global change, such as rising temperature, resulting in local effects, such as melting ice. In other cases, a change may be related to a change in a particular ocean current or weather system. In such cases, the regional effect may be disproportionate and will not necessarily follow the global trend. There are three major ways in which global warming will make changes to regional climate: The coast can also be considered a region, and will suffer severe impacts from sea level rise. The Arctic , Africa , small islands and Asian megadeltas are regions that are likely to be especially affected by climate change. Climate change and gender The impacts of climate change can be thought of in terms of sensitivity and vulnerability. Sectors sensitive to climate change include water resources, coastal zones, human settlements, and human health. Industries sensitive to climate change include agriculture , fisheries , forestry , energy , construction , insurance , financial services , tourism , and recreation. Food security , Food vs fuel , and â€” world food price crisis Graph of net crop production worldwide and in selected tropical countries. Raw data from the United Nations. This graph is based on several studies. With medium confidence, global production potential was projected to: Most of the studies on global agriculture assessed by Schneider et al. Studies had also not considered the development of specific practices or technologies to aid adaptation to climate change. Food security Easterling et al. It was noted that these projections were highly uncertain and had limitations. However, the assessed studies suggested a number of fairly robust findings. The first was that climate change would likely increase the number of people at risk of hunger compared with reference scenarios with no climate change. Climate change impacts depended strongly on projected future social and economic development. Additionally, the magnitude of climate change impacts was projected to be smaller compared to the impact of social and economic development. In , the global estimate for the number of people undernourished was million. By contrast, the SRES A2 scenario showed only a small decrease in the risk of hunger from levels. The smaller reduction under A2 was attributed to the higher projected future population level in this scenario. Droughts and agriculture Some evidence suggests that droughts have been occurring more frequently because of global warming and they are expected to become more frequent and intense in Africa, southern Europe, the Middle East, most of the Americas, Australia, and Southeast Asia. Effects of global warming on human health Human beings are exposed to climate change through changing weather patterns temperature, precipitation, sea-level rise and more frequent extreme events and indirectly through changes in water, air and food quality and changes in ecosystems, agriculture, industry and settlements and the economy Confalonieri et al.

Chapter 5 : These Effects of Global Warming on Wildlife are Way Too Scary

Global warming effects on animals is becoming very apparent. Increasing global temperatures are expected to disrupt ecosystems and are pushing species to extinction if they are unable to adapt quickly enough.

Recreation Plants, Animals, and Ecosystems Most plants and animals live in areas with very specific climate conditions, such as temperature and rainfall patterns, that enable them to thrive. Any change in the climate of an area can affect the plants and animals living there, as well as the makeup of the entire ecosystem. Some species are already responding to a warmer climate by moving to cooler locations. For example, some North American animals and plants are moving farther north or to higher elevations to find suitable places to live. Climate change also alters the life cycles of plants and animals. For example, as temperatures get warmer, many plants are starting to grow and bloom earlier in the spring and survive longer into the fall. Some animals are waking from hibernation sooner or migrating at different times, too. Disappearing Habitats As the Earth gets warmer, plants and animals that need to live in cold places, like on mountaintops or in the Arctic, might not have a suitable place to live. If the Earth keeps getting warmer, up to oneâ€”fourth of all the plants and animals on Earth could become extinct within years. Every plant and animal plays a role in the ecosystem for example, as a source of food, a predator, a pollinator, a source of shelter , so losing one species can affect many others. What can people do about it? Just like people, plants and animals will have to adapt to climate change. Many types of birds in North America are already migrating further north as the temperature warms. People can help these animals adapt by protecting and preserving their habitats. Coral Reefs Coral reefs are created in shallow tropical waters by millions of tiny animals called corals. Each coral makes a skeleton for itself, and over time, these skeletons build up to create coral reefs, which provide habitat for lots of fish and other ocean creatures. Warmer water has already caused coral bleaching a type of damage to corals in many parts of the world. By , live corals could become rare in tropical and sub-tropical reefs due to the combined effects of warmer water and increased ocean acidity caused by more carbon dioxide in the atmosphere. The loss of coral reefs will reduce habitats for many other sea creatures, and it will disrupt the food web that connects all the living things in the ocean. To help give coral reefs a better chance of surviving the effects of climate change, swimmers, boaters, and divers should treat these fragile ecosystems with care. People can also support groups working to protect coral reefs.

Chapter 6 : Global Warming Effects on Land

Plants and animals. The effects of global warming on the Earth's ecosystems are expected to be profound and widespread. Many species of plants and animals are already moving their range northward.

Global Warming Effects and Causes: A Top 10 List 1. Carbon dioxide emissions from fossil fuel burning power plants Our ever increasing addiction to electricity from coal burning power plants releases enormous amounts of carbon dioxide into the atmosphere. Every day, more electric gadgets flood the market, and without widespread alternative energy sources, we are highly dependent on burning coal for our personal and commercial electrical supply. Our consumption is outpacing our discoveries of ways to mitigate the effects, with no end in sight to our massive consumer culture. Methane emissions from animals , agriculture such as rice paddies, and from Arctic seabeds Methane is another extremely potent greenhouse gas, ranking right behind CO2. When organic matter is broken down by bacteria under oxygen-starved conditions anaerobic decomposition as in rice paddies, methane is produced. The process also takes place in the intestines of herbivorous animals, and with the increase in the amount of concentrated livestock production, the levels of methane released into the atmosphere is increasing. Another source of methane is methane clathrate, a compound containing large amounts of methane trapped in the crystal structure of ice. As methane escapes from the Arctic seabed , the rate of global warming will increase significantly. Deforestation , especially tropical forests for wood, pulp, and farmland The use of forests for fuel both wood and for charcoal is one cause of deforestation, but in the first world, our appetite for wood and paper products, our consumption of livestock grazed on former forest land, and the use of tropical forest lands for commodities like palm oil plantations contributes to the mass deforestation of our world. Forests remove and store carbon dioxide from the atmosphere, and this deforestation releases large amounts of carbon, as well as reducing the amount of carbon capture on the planet. Increase in usage of chemical fertilizers on croplands In the last half of the 20th century, the use of chemical fertilizers as opposed to the historical use of animal manure has risen dramatically. In addition to these effects, high nitrate levels in groundwater due to over-fertilization are cause for concern for human health. Scientists predict an increase in sea levels worldwide due to the melting of two massive ice sheets in Antarctica and Greenland, especially on the East coast of the U. However, many nations around the world will experience the effects of rising sea levels , which could displace millions of people. One nation, the Maldives, is already looking for a new home, thanks to rising sea levels. More killer storms The severity of storms such as hurricanes and cyclones is increasing , and research published in Nature found: The maximum wind speeds of the strongest tropical cyclones have increased significantly since , according to research published in Nature this week. And the upward trend, thought to be driven by rising ocean temperatures, is unlikely to stop at any time soon. One of the main causes of this will be the spread of desertification, and its accompanying effects. It causes more violent swings between floods and droughts. Global warming causes , deaths a year 9. Widespread extinction of species According to research published in Nature, by , rising temperatures could lead to the extinction of more than a million species. This is a concerning matter on many fronts. Disappearance of coral reefs A report on coral reefs from WWF says that in a worst case scenario, coral populations will collapse by due to increased temperatures and ocean acidification and its effects. For reefs, warming waters and acidification are closing in like a pair of jaws that threaten to make them the first global ecosystem to disappear.

Chapter 7 : How will animals be affected by Arctic warming?

Importantly, global warming is having a significant impact on the world's animal and plant species. Global Warming Effects on Animals and Plants The planet's ecosystems work in a complex balance.

Southernmost species are projected to shift northward, competing with northern species for resources. The broad whitefish, Arctic char, and Arctic cisco are particularly vulnerable to displacement as they are wholly or mostly northern in their distribution. As water temperatures rise, spawning grounds for cold-water species will shift northward and are likely to be diminished. As southerly fish species move northward, they may introduce new parasites and diseases to which arctic fish are not adapted, increasing the risk of death for arctic species. The implications of these changes for both commercial and subsistence fishing in far northern areas are potentially devastating as the most vulnerable species are often the only fishable species present. In some southern mainland areas of the Arctic, new arrivals from the south may also bring new opportunities for fisheries , and increased productivity of some northern fish populations due to higher growth may allow for increased fishing of some species. Arctic Char The Arctic char is the northernmost freshwater fish in the world and occurs throughout the Arctic. Some populations are locked in lakes where they feed on midge larvae and grow very slowly. Other populations migrate to the sea in summer where they feed on crustaceans and small fish, and char in these populations grow more quickly. Increasing water temperatures in freshwaters, estuaries, and marine near-shore areas are likely to increase growth of both types of char, especially in the mid-latitudes of their distribution, assuming that there is also a parallel general increase in food chain productivity. This is likely to increase fishing opportunities, but may be offset by the effects of competition from new fish species. Research on Arctic char in Resolute Lake, Canada suggests that rising temperatures cause an increase in respiration, which increases the accumulation of heavy metals in the fish. In addition, other climate-related changes described on the previous page are expected to increase the levels of contaminants in lakes. Furthermore, reduced ice cover in lakes, increased mixing between water layers, and other warming-induced changes are projected to result in lakes retaining more of the contaminants that flow into them. Arctic Grayling The Arctic grayling is a stream fish with about a year lifespan. In some northern locations, it is the only species of fish that occupies local streams. Results indicate that while young grayling do well in warmer water, adults fare poorly, actually losing weight in warm years. Projected climate warming is thus likely to cause the elimination of this population , with no opportunities for other species to naturally come into the lake. Lake Trout Long-term studies project that a warmer future will severely stress lake trout, with related impacts on the food web. Long-term studies in Toolik Lake, Alaska project that a warmer future is likely to result in the elimination of this lake trout population. This requirement greatly exceeds current food availability in the lake. Furthermore, the projected future combination of higher temperatures, a longer openwater season, and increased phosphorus in the water released into streams as permafrost thaws is expected to increase production of small aquatic life forms that consume oxygen, thereby reducing oxygen concentrations in deeper water to a level below that needed by lake trout and some other living things , thus reducing the bottomwater habitat. With surface water warming beyond the threshold required for these fish, the trout will be squeezed into a shrinking habitat between the inhospitable conditions near the surface and those at the lake bottom. The loss of the lake trout, the top predator in this system, is likely to have cascading impacts through the food web , with major impacts on both the structure and functioning of the ecosystem.

Chapter 8 : Unexpectedly Bizarre Effects of Global Warming on Animals

The planet is warming, from North Pole to South Pole. Since , the global average surface temperature has increased between and degrees Fahrenheit (to degrees Celsius)-even.

Check new design of our homepage! HelpSaveNature Staff Global warming The fact that its effects on the planet are becoming more and more obvious is a sign of an approaching disaster. We often associate global warming with loss of habitat for species like the polar bear or the Arctic fox. It may come as a surprise for many, but the effects of global warming on wildlife go well beyond this. Going by the rate at which the planet is becoming warm, it will result in irreversible damage to various ecosystems within the next few years, and that will sound the death knell for numerous species thriving in these ecosystems. Global Warming Effects on the Wildlife The climatic system of our planet is vulnerable to changes in global temperature, as a result of which a rise in temperature by a few degrees can have severe repercussions on the overall climate pattern. While these changes were unheard of until a few years back, a look around and you will get to see some obvious modifications in your surroundings. While retreating glaciers and melting polar ice happen to be signs of climate change at high altitudes and in polar areas respectively, extremely hot summers, freezing of lakes well in advance, spring ice breaking way before schedule, untimely precipitation, are signs of the same in your own surroundings. The change in climatic pattern is also fueling natural disasters, and the rise in frequency of hurricanes, wildfires, etc. All these changes together are not just coming heavy on humans, but are also taking a toll on plants and animals on the planet. Loss of Habitat for Species The impact of global warming on wildlife is best depicted by habitat loss for numerous species of plants as well as animals. The polar region is home to a number of species which have adapted themselves to the cold conditions that exist there. If average global temperature continues to soar, the polar climate will also change, and that in turn, will trigger a series of changes in the polar ecosystem. It will become difficult for animals like the Arctic fox, polar bear, caribou, snow owl, etc. Similar situation will arise in high altitude regions, wherein the species will be forced to move higher in search of ideal abiotic conditions. This will eventually trigger habitat loss for several species - as a result of which the competition within species will intensify, and eventually result in their extinction. One of the best examples of animals threatened by global warming is the polar bear. In fact, it deserves to be the mascot of global warming affected wild kingdom. Even though this species of bear is enlisted as vulnerable in the IUCN Red List as of today, experts are of the opinion that we will have to shift them to the list of endangered species sometime soon. In fact, trends suggest that the polar bear population will decline to one-third of what it is today by the year These bears tend to rely on the massive chunks of floating ice when it comes to hunting, and melting of these ice chunks makes it difficult for them to hunt - thus leaving them without food. Even though polar bears can swim, they require to take rest after short span of time and with no ice chunks to take rest on, things are becoming increasingly difficult for them. All this is taking a toll on their biology, and reproduction trends in this species hints at this very fact, with female polar bears having a tough time rearing their young ones. Habitat loss triggered as a result of global warming has even more disastrous effects on species with a limited range, and the golden toad - native to Monteverde cloud forest of Costa Rica, is one of the best examples of the same. This species became extinct when a fungal epidemic swept through this region, thus bringing about a severe decline in golden toad population. This epidemic was attributed to warm temperature which resulted in conditions ideal for fungal growth. The few tadpoles which managed to survive this epidemic, eventually succumbed to drying of water sources as a result of increasing temperature. The golden toad is a representative of several amphibian species which succumbed to this condition somewhere between s and s. Change in Migration Pattern The effects of global warming on animals which resort to migration have also become quite obvious over the last few years, as their migration timing and pattern are put out of sync by the changes in climatic conditions. Animals rely on temperature changes to begin their migratory journey. For instance, animals which migrate from cold regions of the higher latitudes to the warm regions of the tropics - and back, begin their migration when the temperature reaches certain degrees. The alteration in climate pattern of late is prompting these animals to begin their journey before

schedule, as a result of which they reach their destination way before time, only to be welcomed by shortage of food. This is evident in various parts of the world wherein migratory species returning from breeding grounds to feeding grounds with their young ones before schedule are facing a severe shortage of food. Severe Shortage of Food Shortage of food is also resulting in quite a few complications among species. Krill population in the Antarctic Ocean has come down by percent, and this has left the penguins, with krill as a major constituent of their diet, with no food to eat. This has brought down the population of species like the Emperor penguin by 50 percent. The penguins are not the only ones who are affected by the decline in krill population in Antarctica, even animals like whales and seals are facing food problems because of this. Change in Reproductive Behavior All these changes induced by global warming have brought about several changes in the behavior of animals as well. Several species are giving birth to their young ones before or after schedule to make sure that the birth of these young ones coincides with availability of food. One of the apt examples of the same is the blue tit species Parus caeruleus which is known to feed on leaf-eating grubs. Unfurling of leaves before time is attracting leaf-eating grubs in large numbers. Blue tits have started laying their eggs two weeks earlier than the schedule so as to make sure that food is available in plenty for their young ones when these eggs hatch. Even hibernating animals - like marmots, have pre-poned their hibernation by approximately 3 weeks. Rising Instances of Pest Outbreaks Warm temperatures have created conditions ideal for the growth of insects, and this in turn has increased the instances of pest outbreaks in various forests of the world. Insects that were restricted to the tropical regions of the world at one point of time, are now found in abundance in higher latitudes. If the coyotes, native to North American prairie grasslands, and tigers, native to the sundarbans of southeast Asia, are encroaching on human settlements today, it is only because of loss of habitat and severe shortage of food that they are facing as a result of change in global temperature.

Chapter 9 : Arctic Climate Change: How will animals be affected by Arctic warming?

The effects of global warming are the environmental and social changes caused (directly or indirectly) by human emissions of greenhouse racedaydvl.com is a scientific consensus that climate change is occurring, and that human activities are the primary driver.

How global warming works? Due to increased global warming, the level of the sea will rise which will lead to flooding and this will in turn create havoc in human life. Apart from raising the sea levels, it will also endanger several species of animals and thus will hamper the balance of the ecosystem. Areas in the Arctic are diminishing away and flowing into major oceans. Rising temperatures create a much accelerated threat to wildlife and whole ecosystems in these regions. With glaciers melting at vast rates, a chain of events is being set into motion that cannot be reversed. Irregular weather patterns have already started showing results. Increased precipitation in the form of rain have already been noticed in polar and sub-polar regions. More global warming will lead to more evaporation which will cause more rains. Animals and plants cannot easily adapt to increased rainfall. Plants may die and animals may migrate to other areas, which can cause entire ecosystem out of balance. While it may be flooding in Savannah, severe drought is happening elsewhere in the world. As temperatures warm, the presence of drought has increased in the western U. Large scale evaporation will be the major cause of droughts in many places particularly Africa. Although, it is reeling under the huge pressure of water crisis, increased global warming would further make the situation worse and will cause malnutrition. As the temperature of the oceans rises, hurricanes and other storms are likely to become stronger. With the increase in the global warming , the water in the ocean warms up and it heats up the surrounding air, creating hurricanes. Rise of Sea Levels: The melting of polar ice-caps and less water evaporating into the atmosphere are causing increased sea levels. Quaint coastal towns and cities near the U. As the global temperature will increase, plants will find it harder to survive and will die. The shortage of the food may lead to war and conflicts in some countries. Because of greenhouse gases and other causes, unexpected streaks of severe weather are just the tips of the iceberg in global warming. Heat waves cause dangerously hot weather and in recent years, more deaths have occurred due to heat waves than in the last sixty years. While wildfires are a natural occurrence, with the added carbon dioxide in the air, and hotter summers, the evidence speaks for itself. More frequent wildfires continue to surface in vast amounts each year. Each time a wildfire burns, the less oxygen there is to combat the dangerous amounts of carbon dioxide being released into the atmosphere. Not only is there insurmountable scientific evidence that global warming is increasing, certain types of events, including extreme precipitation is on the rise. Global warming also creates conditions that can lead to more powerful hurricanes and summer storms. Cities and towns on the coast, where sea levels are already rising, face even more challenges as precipitation poses severe flooding. Are you a lover of fall? Maybe spring is your favorite season. Whatever weather and climate you enjoy, it could be happening sooner and shorter, or later and longer. Global warming affects show spring is occurring 10 days sooner than it has in the past. If seasons are changing, weather patterns are going berserk, and flooding is occurring due to rising sea levels, our crops are barely getting a fighting chance. Once the food processing industry goes haywire, the economy will really start getting interesting. The price of staple crops could sky rocket causing major inflation and more economic woes. Once coral reefs are affected, entire ecosystems that thrive become obsolete. Change the time and seasons and birds are flying south for winter sooner, hibernation takes longer, and a whole series of events is set in motion for complete collapse of animal life. The entire food chain could be disrupted and enormous consequences could follow. As more carbon dioxide is trapped in the atmosphere, breathable air becomes harder to come by. If global warming continues, the U. Imagine whole populations where animals can no longer thrive. With such a vast eruption in the animal kingdom, our own world becomes in danger. If doing simple things like taking a walk outside or working in your garden, become unenjoyable due to severe heat waves, think of the quality of life on a much larger scale. Who knows how badly the economy could get with decreased vitality of crops, productions, and manufacturing items. Without having nature on our side, the food industry will fall apart. Without the resources to feed the world, manufacturing will collapse. Hunger will be

our biggest battle. As more chain of events are set in motion, air quality will continue to get worse. As bad as it is now in some areas in the world, multiply that by a million. Another 25 percent would succumb to air related illnesses , starvation, and poverty. What little would remain of the earth as we know it, would be a sliver. The rest of the human population would have to find and implement alternative energy on a consistent and regulated basis. Pretty soon, the domino effect will reach home. Going off the Grid: With the current threat of increasing storms and violent aftermaths of hurricanes and tropical storms, it would only take a few hits to crumble our electrical system. Our fresh water supply will great diminish with global warming. With the demise of coral reefs and the ecosystems therein, less fresh water will flow into lakes and tributaries. Countries like Greenland are deteriorating at a highly elevated rate. Beautiful cities, even continents could one day be part of a vast sea. Effects of global warming.