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A REVIEW ON CLIMATE CHANGE AND ITS IMPACT ON MARINE ECOSYSTEM

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ABSTRACT:

The marine ecosystem is highly inter-connected through predator prey relation. The direct impacts of ocean climate change have 'knock-on' effects through the food chain. For example, recent warmer conditions and associated shifts in plankton abundance and geographical distribution have led to reduced availability of prey fish for some sea birds, which has been strongly linked to recent poor breeding success and reduced survival rates of seabirds.

INTRODUCTION

Man's expanding activities have reached a level at which their effects are global in nature. The atmosphere, land and ocean, as well as life forms on this planet, are clearly being disturbed. We know that some natural trace gases in the atmosphere, such as CO2, nitrous oxide, methane and troposphere ozone, have been increasing during the last century. In addition, other trace gases, notably chlorofluorocarbons [CFCs] are being emitted in to the atmosphere. These gases absorb and emit radiation and are thus able to influence the Earth's climate. [They are collectively referred as greenhouse effect gases].

The impacts of climate change are already being felt around the world. The most direct effects of climate change are on temperature and precipitation patterns. Marine air and sea surface temperatures have been increasing at similar rate to land air temperature. Since the 1980s the rate of rise has been about 0.2-0.6 C per decade. Shifts in temperature and precipitation will be a shock to fragile ecosystems which depend on specific climatic conditions. In the present paper the impacts of recent warmer conditions and climate change on biotic factors of marine ecosystem are discussed.

OBSERVATIONS AND DISCUSSION PLANKTON

What is already happening?

A 1000- km northward shift of warmer-water plankton, has been observed. Over the past 50 years, as the seas have become warmer. The population of the previously dominant and important cold-water zooplankton has declined in biomass by 70% since the 1960s,

The seasonal timing of plankton production has altered in response to recent climate changes. Some species are occurring up to four to six weeks earlier than 20 years ago, affecting predators, including fish.

What could happen?

Continued increase in sea temperature, due to climate change and associated changes such as ocean acidification, are likely to exert major influences on plankton abundance and geographical distributions, with implications for primary production and climate control.

FISH

What is already happening?

Abundances of warm-water fish species (e.g. red mullet, John Dory, triggerfish) have increased in waters during recent decades, while many cold-water species have experienced declines.

Cold –water species, such as cod and eelpout, have been shown to experience metabolic stress during warm years, as evidenced by slower growth rates and difficulties in supplying oxygen to body tissues.

What could happen?

Climate change will have far reaching impacts on the dynamics of fish populations.

MARINE MAMMALS

What is already happening?

The impact of climate change on marine mammals (i.e. seals and cetaceans) remains poorly understood.

What could happen?

Marine mammals may suffer impacts from changes affecting the food chain that supports them.

SEA BIRDS

What is already happening?

Poor breeding success and reduced survival of sea birds in recent years have been strongly linked to warmer winters and changes to their fish prey populations (e.g. smaller, less- nutritious sand eels, increased snake pipefish abundance).

What could happen?

Some species will have difficulties in adapting to changing prey availability

Anticipated sea-level rise and a greater number of more severe storms may reduce available breeding habitat for shoreline-nesting species (e.g. terns) and wash away nests.

NON-NATIVES

What is already happening?

Distributions of non-native species are currently limited by water temperature. Non-native marine organisms are spreading and becoming established through a combination of climate change, migration and human introduction. These can cause major ecological changes.

What could happen?

Future temperature increases could enable more species to invade and become established, replacing current native species.

INTERTIDAL SPECIES

What is already happening?

Some warm-water invertebrates and algae show continued increases in abundance and have extended their ranges.

Cold water species (e.g. the acorn barnacle and dabber locks alga) have continued to decrease in abundance throughout the period 2001-2007.

What could happen?

Projected changes in sea level and storms may have important indirect impacts, as more sea defenses are required. These act as artificial rocky shores allowing intertidal species to unnaturally extend their range.

Some new species will become established, whilst others will disappear from our shores.

SEABED ECOLOGY

What is already happening?

Climate processes influence the abundance and species composition of seabed communities, directly affecting the availability of food for bottom feeding fish.

What could happen?

Changes to sea temperature and/or food supply are likely to continue to alter the ecological structure of the seabed.

COASTAL HABITATS

What is already happening?

Coastal habitats are being lost.

In England, it is estimated that at least 40-100 hectares of salt marsh is being lost every year; projects are under way to estimate rates of loss in other regions.

What could happen?

Coastal habitat loss will be accelerated by sea-level rise.

CONCLUSION

From the above observations it is evident that climate change impacts a drastic change on biotic factors of the marine ecosystem

REFERENCES

Marine climate change impacts partnership (MCCIP), UK

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