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Adaptation to Climate Change Options for Marine Turtles

The Adaptation to Climate change for marine Turtles (ACT) project is addressing how marine turtles are affected by climate change and the best ways to reduce their vulnerability to changing environmental conditions.

What is climate change adaptation?

With heightened awareness of climate-related impacts on ecosystems and species, has come increased interest and research into climate change adaptation. 'Adaptation' has many meanings, but here we refer to it as management actions that are put into place now to reduce vulnerability to climate change in the future. Adaptation requires an understanding of likely future scenarios and how species, habitats and communities will be affected by climate change. We can then plan on the best strategies to prepare for those changes.

Climate change adaptation in coastal zones: sea turtles as umbrella species

Climate change adaptation in coastal areas is vital given the importance of these areas for the people and species that inhabit them. Climate change is acting on systems already under pressure from non-climate stressors ranging from development, pollution, over-exploitation of fish and other extractive resources to invasive species. The combined impacts of these stressors have already left many areas severely altered from their natural state and therefore particularly vulnerable to the additional pressure of climate change.

Moving between beach, reef and open ocean throughout their lives, hawksbill sea turtles characterize the interconnected nature of coastal

habitats and can help to focus attention on climate change issues in coastal areas. Reducing the vulnerability to climate change of hawksbill turtles and the habitats they use is likely to have additional ecological and social benefits. By ensuring healthy habitats for the future, adaptation measures can provide protection for biodiversity and the human communities that these habitats support. As a charismatic and well-known flagship species, hawksbills are also useful for raising awareness of climate change issues.

Project objectives

An ACT project, funded by the MacArthur foundation, has addressed three main questions:

- What are the adaptation options available to us to mitigate the negative impacts of climate change on hawksbill sea turtles and the coastal and marine habitats on which they rely?
- Which of these measures can and should be implemented given our current level of knowledge?
- What are the benefits of managing coastal habitats for hawksbill turtles?

Through expert discussion and surveys with conservation practitioners, academics and coastal managers, a list of recommended adaptation measures has been developed (see reverse).

There is no one ideal solution in adapting to climate change, and we will need to act at many levels starting from top down and bottom up to tackle the environmental challenges of the coming decades. In many cases, we will need to view coastal management in a new, more dynamic and flexible way. Some

solutions will take time to implement, others just a few months, but the need to act is urgent and holding off making decisions is not an option.

Next steps

The next phase of the ACT project will assess which measures are most appropriate in specific locations around the region and support implementation of measures at these sites. The process of putting adaptation measures into action will be monitored and lessons learned can be applied to future projects. Raising awareness of climate change issues and building capacity to act will also be an integral part of the process.

See the full
*'Adaptation to Climate Change:
Options for Marine Turtles'*
at

www.panda.org/lac/marineturtles/act

For more information see
www.panda.org/lac/marineturtles/act
or contact
cctortugas@wwfca.org



RECOMMENDED

Adaptation Measures

1

INTEGRATE MANAGEMENT OF COASTAL AND MARINE RESOURCES

2

ESTABLISH AND ENFORCE CONSTRUCTION SETBACK REGULATIONS

3

INCORPORATE CLIMATE CHANGE INTO LAND-USE PLANNING

4

PREVENT REMOVAL OF NATIVE VEGETATION AND REPLANT WHERE IT HAS ALREADY BEEN REMOVED, TO CREATE SHADE AND STABILISE BEACHES

5

ENSURE THAT NEW AND CURRENT COASTAL DEVELOPMENT IS 'TURTLE-FRIENDLY'

6

MONITOR SAND/NEST TEMPERATURES AND RECORD NESTING AREAS, NEST SUCCESS, HATCHLING SEX RATIOS

7

MEASURE BEACH PROFILES AND BEACH DYNAMICS FOR MODELLING FUTURE IMPACTS OF SEA-LEVEL RISE/STORM SURGE

8

IDENTIFY NESTING AREAS THAT MAY BE USED IN THE FUTURE

9

CONTROL LAND-BASED ACTIVITY TO REDUCE POLLUTION AND SEDIMENTATION ON CORAL REEFS

10

IDENTIFY AND PRIORITIZE PROTECTION OF KEY FORAGING SITES/REFUGIA/AREAS OF HIGH CORAL/ SPONGE COVER BY ENSURING THEIR COVERAGE IN A NETWORK OF PROTECTED AREAS

