

## **CLIMATE STATEMENT AND PLAN ADDRESSING THE IMPACT OF ANTHROPOGENIC CLIMATE CHANGE AND OCEAN ACIDIFICATION ON BIODIVERSITY**

The input of greenhouse gases into the Earth's atmosphere from human activities has created a complex situation that threatens human civilization and much of the life on the planet Earth. Carbon dioxide, methane and other greenhouse gases are increasing the temperature of the planet and its ocean. Increased atmospheric carbon dioxide concentrations dissolve into water and increase the acidity of both oceans and fresh water. The changes in temperature and acidity are starting to have a significant negative impact on human civilization and many other species that inhabit the planet. There is increasing concern that several positive feedback loops may kick in, amplifying the input of greenhouse gases to the atmosphere. These positive feedback loops could put control of global warming beyond human control. Time is running out to stop this chain of very unfortunate events. While the above may seem extreme, they are based on widespread consensus within the scientific community.

This situation can no longer be ignored and requires immediate action from all nations, governmental bodies, NGOs, corporations, businesses, religious organizations, and all citizens of the Earth. Global warming and ocean acidification pose a threat to everything we all hold dear – our children, our friends, our comfortable lifestyles, art, literature, music, dance, sports, our concerns about the welfare of the less fortunate, our political and social life, our bank accounts and more. Everything we care about will be adversely affected unless we change direction and stop pumping greenhouse gases into the atmosphere. Also critical in the immediate future is research into ways of mitigating and adapting to the impact of global warming that is already “baked into the system.”

Pacific Biodiversity Institute has developed a Climate Action Plan to guide our operations and activities in relation to this critical global situation.

Briefly, three key themes encompass PBI's response to the impact of climate change and ocean acidification on biodiversity:

1. Research on the effects of climate change and ocean acidification on terrestrial and marine ecosystems with a focus on monitoring the changes occurring and developing techniques to mitigate the negative impacts.
2. Identification of additional stressors that effect imperiled species and ecosystems that may be exacerbated by climate change and identification of methods of reducing these stressors.
3. Outreach, education and internal policies focused on these issues.

PBI is integrating these key themes into all of our projects as follows:

### **1. Research on the effects of climate change and ocean acidification on biodiversity**

The effects of climate change and ocean acidification on biodiversity are complex and still not well understood in many ecosystems. Although some impacts are starting to be apparent, the

extent of these impacts and the rates of ecosystem change are poorly understood. Effective action needs to be based on adequate information, knowledge, and understanding. The goal of our current research is to contribute to the growing body of knowledge of the effects of increasing greenhouse gases on biodiversity in marine and terrestrial environments. PBI is engaged in several long-term research projects that are monitoring changes in the abundance and distribution of individual species in marine and terrestrial ecosystems. Our long-term research sites offer insight into the impact of climate change and other stressors. The data we collect provides an excellent opportunity to evaluate the stresses impacting species and overall ecosystem health. Our long-term monitoring of wildlife populations and the distribution of specific species can be correlated to variables involved with climate change and marine acidity. Analysis of the combined data will yield insights into effects of these and other stressors on the species we are studying and the ecosystems that they inhabit. This information can form the basis for an informed and intelligent response to the types of actions that can be taken to mitigate the stress on species and ecosystems.

## **2. Identification of additional stressors and research targeted to optimal methods of reducing stress of species and ecosystems impacted by climate change**

PBI's research projects are focused on evaluating the multiple stressors (noise, pollution, logging, habitat destruction, over-exploitation, roads and associated traffic, invasive species, etc.) that impact species and ecosystems. We are collecting long-term data on how multiple stressors impact specific species. This research adds to the knowledge base that is needed to develop effective strategies to reduce both climate related stress and other anthropogenic stress on species and ecosystems. We are continuing our long-term research projects on imperiled terrestrial and marine species with an emphasis on contributing better understanding of how to mitigate the stress caused by accelerated greenhouse gas accumulations. We are also developing methods of evaluating overall ecosystem health and investigating methods to mitigate the negative aspects of climate change and ocean acidification.

## **3. Outreach, education and internal policies focused on understanding climate change, concrete actions that can be taken, and methods of mitigating the unavoidable negative effects.**

We strongly urge citizens and decision-makers to take immediate action to decrease to greenhouse gas production. PBI is currently engaged in outreach and education efforts about the adverse consequences of climate change and ocean acidification on biodiversity and human life. In each project we are engaged in, we educate people about interconnections between environmental events that people are witnessing (or wildlife that people care about) and the increasing greenhouse gas concentrations in the atmosphere. We are publicizing that connection through newspaper articles, radio and TV interviews, social media, newsletters, and public presentations.

PBI's internal policies and actions are changing to move the organization to a carbon-neutral footprint. We are reviewing all of our activities to evaluate the impact that they may have on

climate change. Our travel policies have been modified to strongly encourage reduction of travel that produces greenhouse gases. For example, our staff is encouraged to commute by bicycle or walking, compost biodegradable foods, and grow their own food on PBI's property or at home. We are researching options for carbon capture and storage using restoration of degraded sites with plants that rapidly capture CO<sub>2</sub> and the burial of biochar.

We are also incorporating educational opportunities and community organizing events into PBI's short and long-term planning to focus on implementing direct actions that can reduce or eliminate anthropogenic stress on species and ecosystems. This work is to be guided by the best available science, including the results of our own research. Our goal is to inform citizens and policy makers in order to implement actions that reduce stresses by practical actions.