

Steven Apfelbaum



Coastal Concerns

Analyzing the impacts of climate change on U.S. coasts

From storms and floods to rapidly rising sea levels, U.S. coastal areas have experienced the effects of climate change. SWS Assistant Editor Williette Nyanue recently spoke with Steven Apfelbaum, founder and principal ecologist of Applied Ecological Services Inc., to learn how climate change will continue to affect the U.S. coast.

Williette Nyanue: What is in store for our coastal areas?

Steven Apfelbaum: The effects of climate change no longer are just a worry for the future. Perhaps nowhere has this become more evident than in our coastal areas, and Superstorm Sandy underscored the point. Sea levels are demonstrably rising, and faster than previously predicted. Storm intensities, paths and sizes are changing and increasing relative to the averages we have compiled over the last 100-plus years. And, to complicate matters further, all of our most intensive development took place during what appeared to be a more stable period, placing many structures in areas that are now under siege from the elements in a new way. In short, we are faced with planning for a future that has, to all appearances, already arrived.

Nyanue: How will these changes impact the lives of everyday citizens?

Apfelbaum: All citizens, and particularly the most financially vulnerable, will experience the negative effects of climate change through rising food prices, disrupted transportation and increasing insurance rates, if not through the outright destruction of their homes and businesses. But there also may be new opportunities to build resiliency into coastal areas, restore coastlines and protect developed shore lands.

Nyanue: How will coastal changes

impact our economy?

Apfelbaum: There are plenty of economists tallying up the costs of climate change: human health being affected by extreme temperatures, polluted water and mold from flood damage; the immediate costs of building and infrastructure stressed and destroyed by floods and storm surges; financial losses from disrupted businesses—the list is seemingly endless.

But there can be positive impacts as well. We can realize some of these if we execute climate change adaptation by designing with nature [in mind]. We can determine the physical, spatial and ecological needs to better buffer against storms and integrate these needs into revitalized designs that create dynamically stable and safe environments.

Nyanue: How do we plan for rising sea levels and increased storm intensity?

Apfelbaum: In almost all areas, human enterprises and infrastructure are designed for the so-called normal conditions of the past 100 years—conditions that are not likely to return. Rising sea levels and increased storm intensity translate to increased vulnerability for such structures. Reinvestments in these high-risk environments need to be completely rethought if we are to live successfully, cost-effectively and safely in coastal zones.

Nyanue: How can we plan to restore lands destroyed by Superstorm Sandy

and similar storms in the future?

Apfelbaum: Coping with climate change is so much more than “just” restoring lands destroyed by Superstorm Sandy, or other similar storms. And it really is not the lands that were destroyed, but, rather, buildings and infrastructure.

There are those who propose massive sea gates to protect against storm surges, but fail to ask about potential repercussions on natural systems such as fisheries, sediment transport and water quality. This strong-arm approach is destined for failure, ecologically speaking.

We need a paradigm shift in our land-use patterns and energy consumption. Most fundamentally, we must change the ways we interact with the natural systems of this earth. Instead of sea gates, we might look at ecologically softening the margins of our city, restoring marshlands and barrier islands, and keeping hard structures away from the areas most susceptible to wind and waves. **SWS**

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