



**PROTECT
CONSERVE
ENHANCE**

A Fuller Understanding of Global Warming



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It's impossible to open the newspaper or scan the Internet without running across some article about global warming: Sea levels rising, remarkable reductions in the extent of glaciers, new invasive species moving into areas that previously were too cold, and the loss of ice on lakes that dramatically reduces our ice fishing season. All of these changes seem to be happening simultaneously, which create a signal that is very hard to ignore. Global warming is a reality that we must address in our efforts to protect, conserve and enhance our natural resources. Certainly there is a cadre of people who are predicting gloom and doom. Conversely, there are some who adamantly deny the existence of any significant global climatic shift—or who at least would argue our role in it. As with any issue of this magnitude, we cannot let the fringes misdirect us or give us an excuse not to attempt to gain a fuller understanding.

Recently, the need to consider the subject of global warming came home, and I'd like to share what I have learned from the experience of working with fisheries and wildlife professionals throughout the country.

The situation was a panel of agency directors, one each from the Northeast, Southeast, Midwest, the West, and Alaska's director. The setting was the annual meeting of the Association of Fish and Wildlife Agencies. This organization is the umbrella group for state natural resource agencies that represents our interests in Washington, D.C., and that works on state partnership issues. In my role of speaking for the Northeast, my staff and I prepared by contacting all of the Northeast states and the Canadian provinces from Ontario to Nova Scotia. We asked for their position on global warming, policies that direct their agencies, and how their management is affected, if at all, by global warming. Throughout this process we also canvassed the literature and

looked for reports that project what will happen and provide guidelines for response.

What emerged were a couple of very clear points that weren't particularly obvious to me going into the process.

Right up front it was clear that every state natural resource agency recognizes that global warming is real and that we need to take it seriously as a management challenge. This wasn't a message from non-biologist bureaucrats swayed by movies such as Al Gore's *An Inconvenient Truth*. This message was sent by field biologists who are observing firsthand alarming changes in Alaska and dramatic ecological shifts in Arizona.

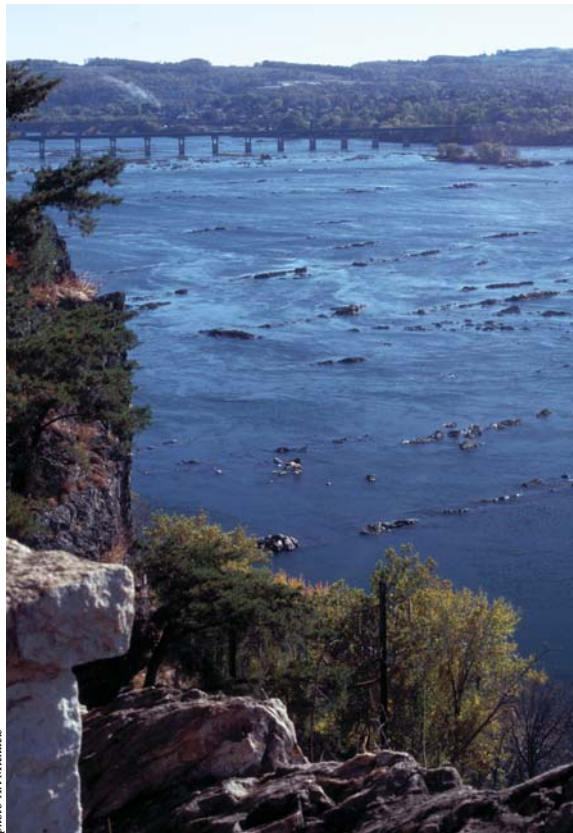


photo-Art Michaels

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It is at these fringes, either the arctic areas or the desert locations, where the effects will be the most dramatic and first noticed. There were also other signals that were brought up repeatedly. For example, diseases and invasive species have moved north as winter's low temperatures have become less severe. All of this has made the vague concept of a worldwide climate shift a local reality for the agencies responsible for managing the resource. We need to understand what is happening and be prepared for what it will bring to each of our states.

That said, there certainly is a great deal of room for better understanding. There is substantial fog surrounding the various model predictions for how fast warming has or will occur. The predicted effects in some areas will be greater than others, and the detail of the models makes it hard to say how changes will affect specific areas.

So given such vagaries, what shall we as natural resource agencies do? Do we change our current management in anticipation of impending changes? Should regulations be adopted that reflect potential future scenarios? We struggled with these questions. Without knowing specific effects for a particular area, it is hard to create management plans. Thus, the mid-latitude states such as Pennsylvania are finding that developing appropriate responses to these challenges is difficult.

It strikes me, however, that resource agencies already have some tools in their arsenals. For example, many of the effects global warming will produce in the coming century resemble the same general type of impact on streams as urbanization has had over the past century. We have already experienced warming of the water caused by loss of riparian vegetation. We have witnessed stream flows becoming unnatural as a result of impervious surfaces (that is, parking lots) producing higher flood flows and more extensive low flows. Nearby groundwater recharge areas have been replaced by houses and strip malls. The result has been the loss of species, degraded water quality, and, almost certainly, loss of recreational opportunities.

To address the effects of global warming on waterways, we will need to apply even more vigorously the same suite of on-the-ground responses for urbanization: Protect riparian areas, reduce impervious surfaces, prevent sprawl as much as possible, and maintain or improve instream habitat. These are good things regardless of the nature of the insult on the land.

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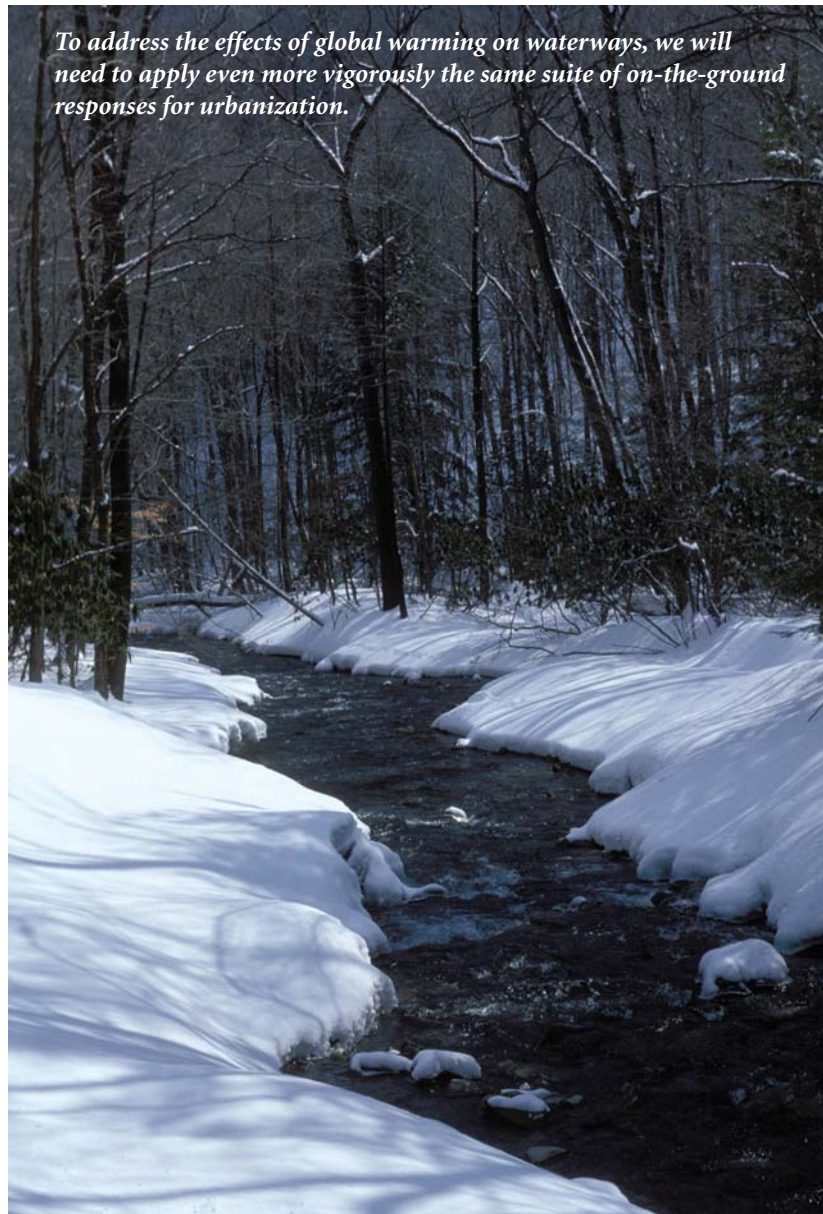


Photo: Russ Gerrig

Yes, there are many impacts on our natural resources, all of which must be addressed. Certainly, there is some uncertainty about which line on a chart will most accurately predict what will happen. But there was no doubt, at least not among the natural resource professionals at this immense conference, that global warming will affect our species, the land and the water. We need to ensure that we are prepared, that the people, such as each of you who values our natural resources, are informed, and that we support appropriate and effective efforts to reduce global warming.

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