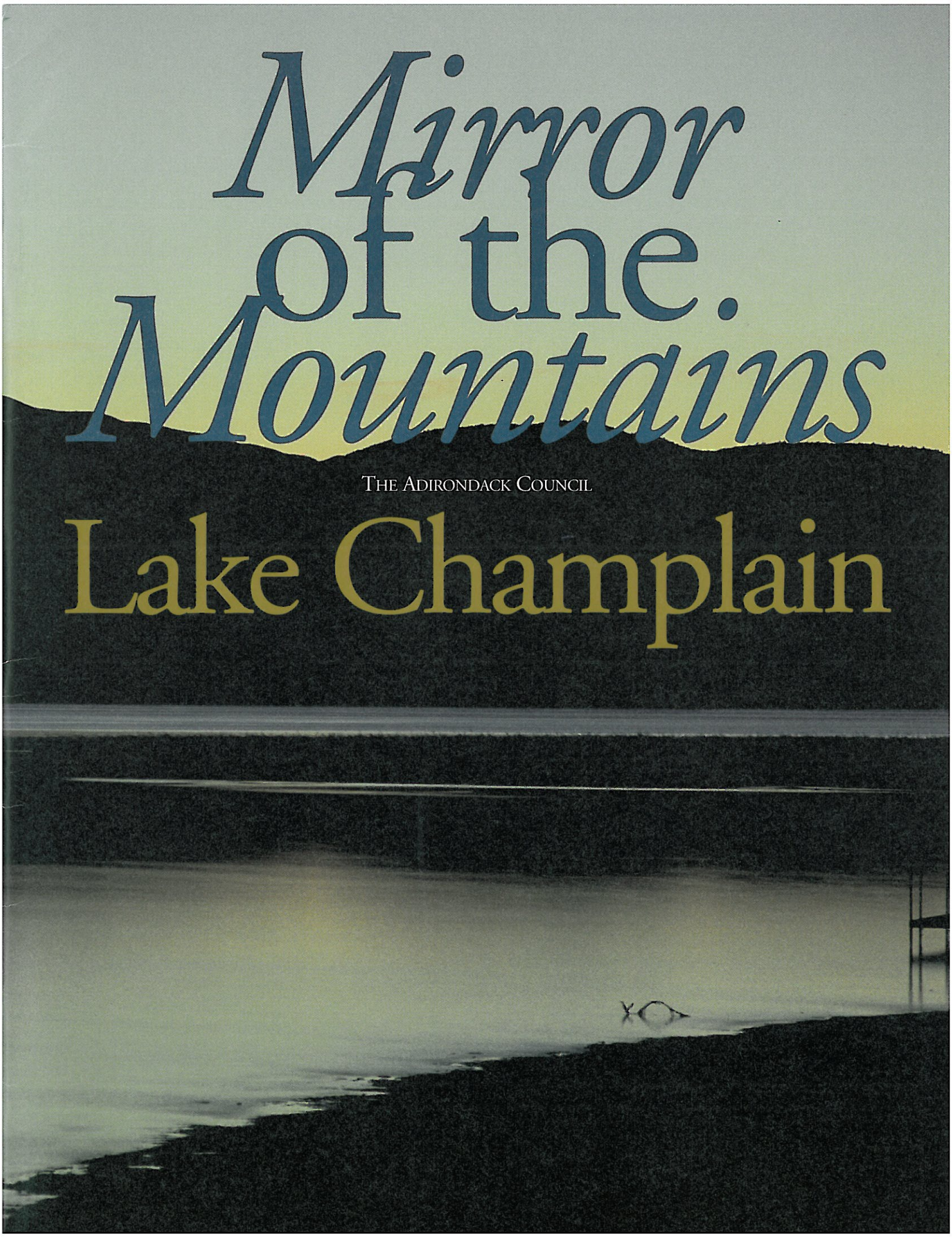
Mirror of the Mountains

THE ADIRONDACK COUNCIL

Lake Champlain



Mirror of the *Mountains*

Lake Champlain

Lakes are the mirrors of the landscape.

They hold together the beauty

of the earth and of the sky.

Ellis W. Shuler, ROCKS AND RIVER, 1945

The
Adirondack Council

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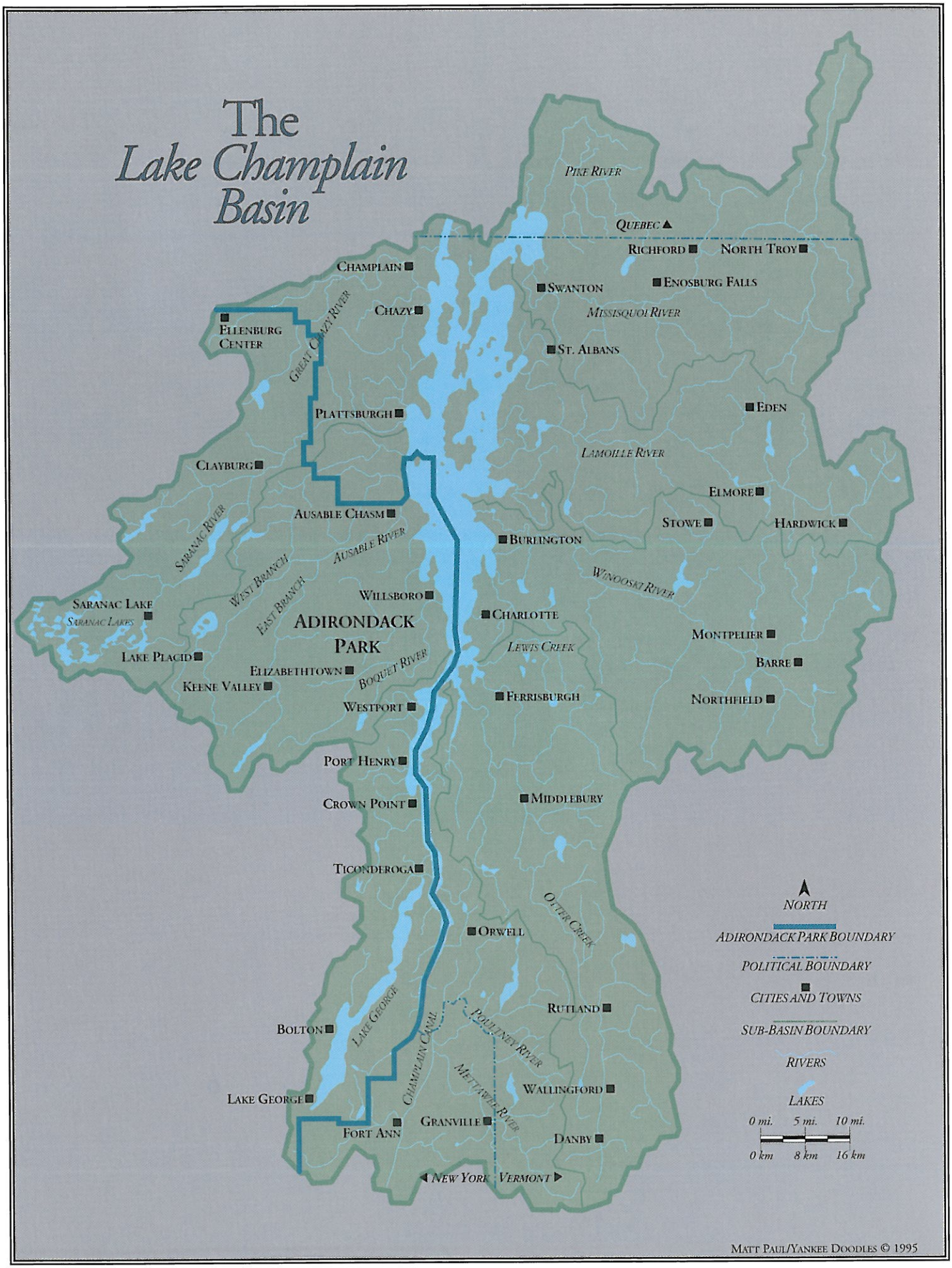
Cover photograph, Lake Champlain near Crown Point Bridge.



A New York State *Perspective*

Most New York State residents and visitors to the region are not aware that three thousand square miles of the Lake Champlain basin are in New York State, forming nearly one-quarter of the Adirondack Park. In fact, the lake itself largely defines the Park's eastern boundary, and the way in which we manage the surrounding land helps to determine the health of Lake Champlain. That is why part of the Adirondack Council's mission is to encourage the conservation of important open-space resources along the shores of Lake Champlain. The Council's advocacy helped ensure the establishment of a New York State Environmental Protection Fund for environmental projects in New York State, including the purchase of land and conservation easements.

The Environmental Protection Fund was used recently to preserve the largest piece of undeveloped private property on Lake Champlain, the Heurich estate. The property is home to the endangered northern timber rattlesnake and is the site of the tallest mountain on the lake, the 1,100-foot-high Split Rock Mountain. The environmental significance of this tract is highlighted by the fact that 193 species of birds, including endangered bald eagles and peregrine falcons, either make their home there, or stop there on their migratory routes.

There are many demands on the Environmental Protection Fund, which was scheduled to grow to $90 million by 1996. And so, beyond the continued need to be vigilant in promoting state acquisition of land and conservation easements from willing sellers, the Council also promotes public policies to preserve sensitive resources and encourage private stewardship.

A positive step in that direction is the Lake Champlain Management Conference, which was convened by an act of Congress and charged with the task of developing a plan to restore the health of the lake and to sustain its many values into the future. The conference has spent several million dollars over the past four years creating a plan that strikes a healthy balance between the environmental and economic concerns of Lake Champlain and its basin.

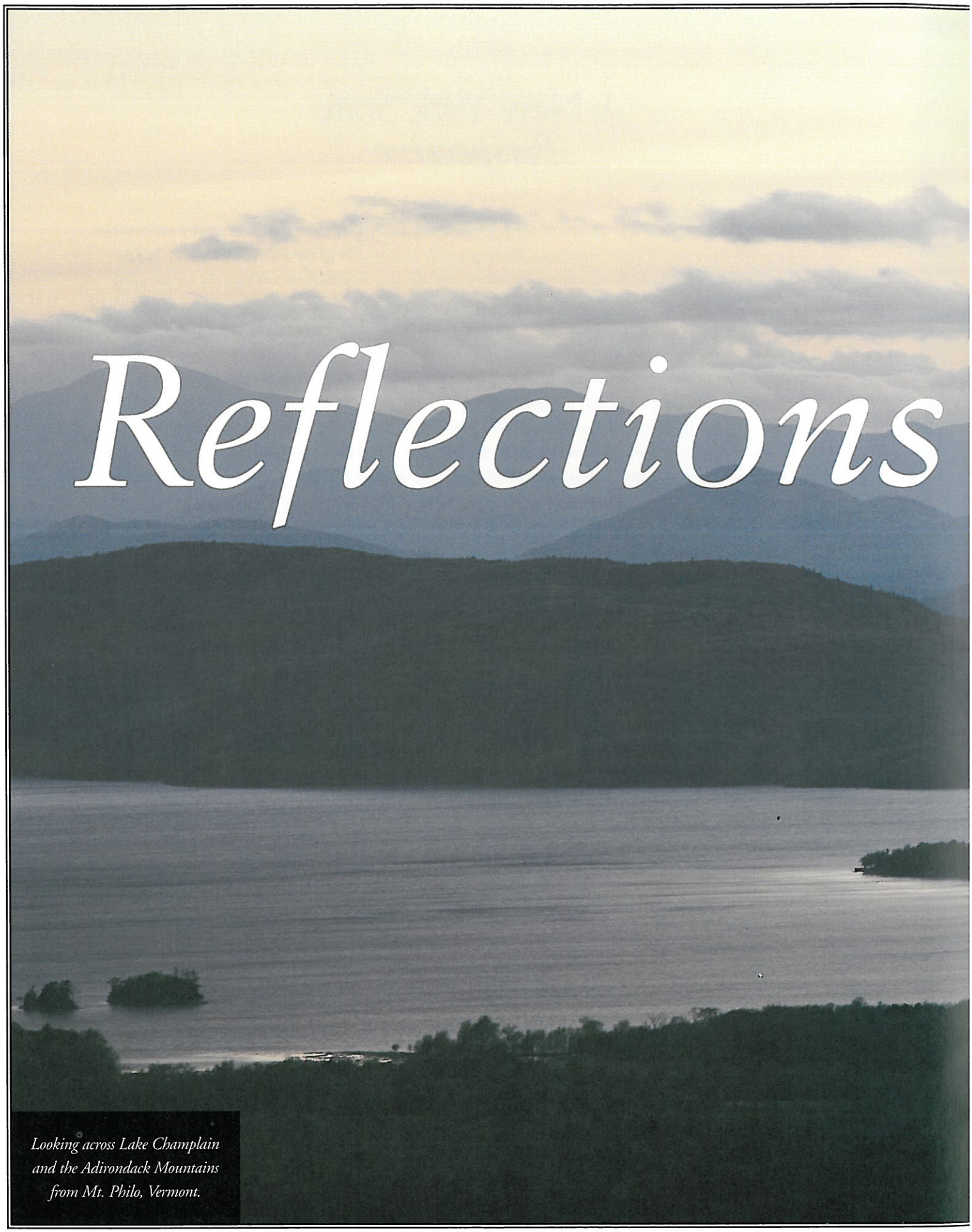
Adirondack Council staff serve on the Lake Champlain Citizens Advisory Committee, which directly advises the Management Conference. But the successful implementation of a management plan for Lake Champlain depends as well upon the wider participation of Council members, other citizens and groups and agencies from Vermont, Quebec and New York.

The challenge for all of us who care about Lake Champlain is to participate in finding solutions to environmental problems, while remaining mindful of the needs of human communities. This publication was designed to promote public dialogue and a commitment to action. We have talked with people from both sides of the lake, all of whom share a deep love and concern for Lake Champlain, and we wish to share their thoughts and ideas with you.

Sincerely,

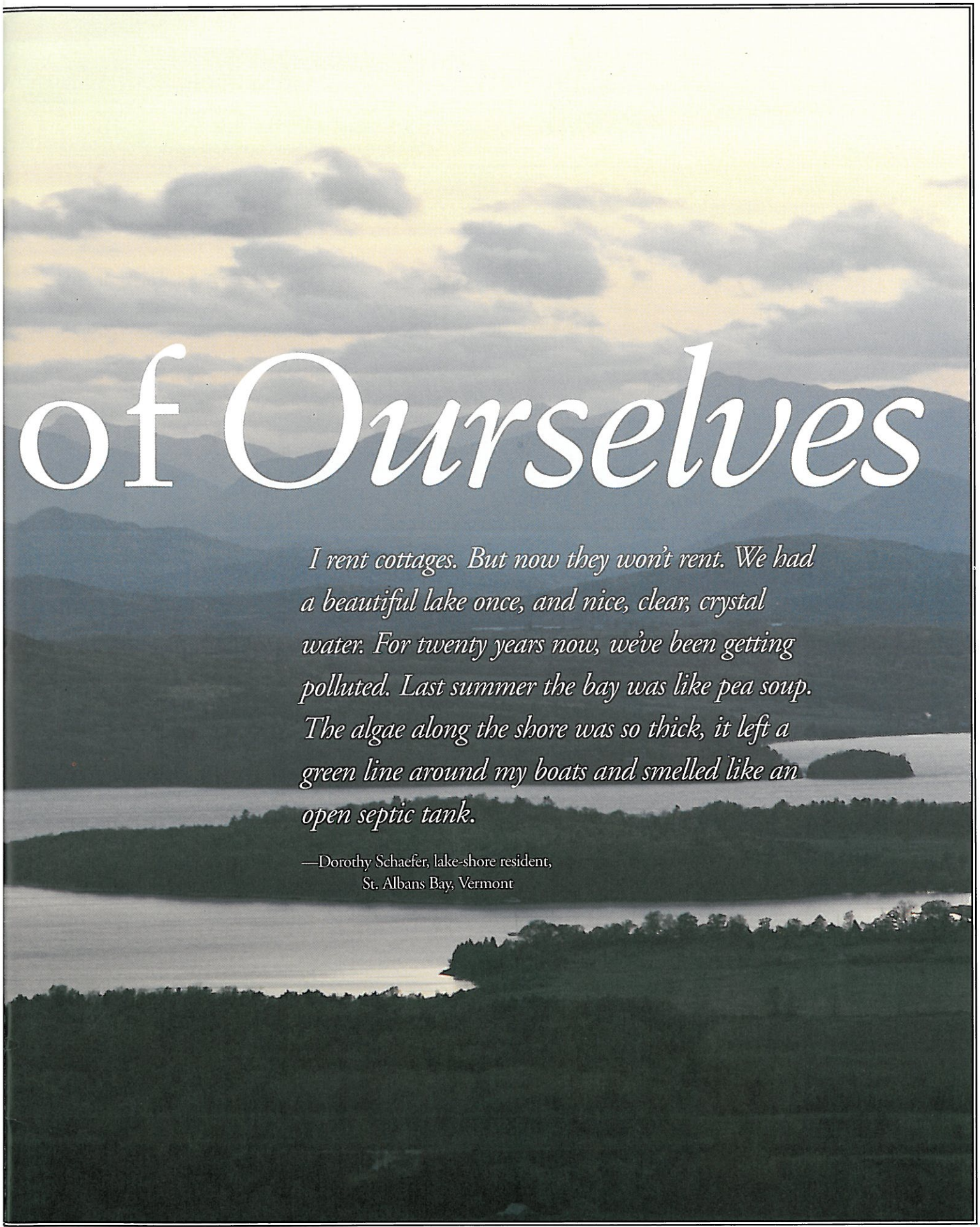
Peter R. Borrelli
Chairman of the Board

Timothy J. Burke
Executive Director



Reflections

Looking across Lake Champlain and the Adirondack Mountains from Mt. Philo, Vermont.



of *Ourselves*

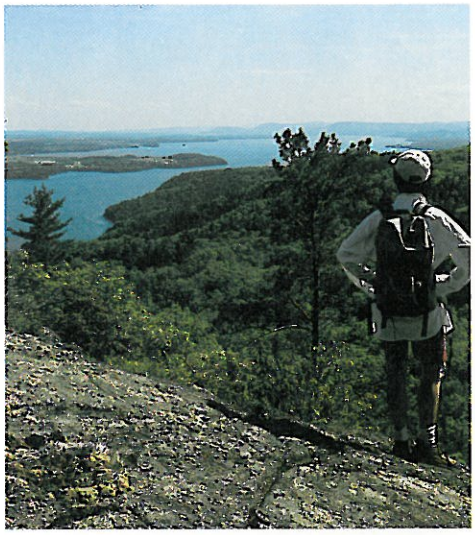
I rent cottages. But now they won't rent. We had a beautiful lake once, and nice, clear, crystal water. For twenty years now, we've been getting polluted. Last summer the bay was like pea soup. The algae along the shore was so thick, it left a green line around my boats and smelled like an open septic tank.

—Dorothy Schaefer, lake-shore resident,
St. Albans Bay, Vermont

The Lake *at a Glance*

Contrary to most people's expectations, Lake Champlain flows north. It empties into the Richelieu River, which in turn flows into the St. Lawrence.

Lake Champlain's governance also runs contrary to common sense: every day more than 200 separate governments in its watershed make decisions that directly or indirectly affect the health of Lake Champlain's complex ecosystems. Just as the Adirondack Park crosses various political and administrative boundaries, the Lake Champlain basin spills over into two states and two countries, with 56% of the watershed in Vermont, 37% in New York and 7% in Quebec.



Lake Champlain is the sixth largest, and some say the most beautiful, body of fresh water in the United States. The lake is generally viewed as consisting of five separate regions distinguished by different ecological and physical characteristics. These are Missisquoi Bay, the northernmost section, which lies along the Canadian border; the Inland Sea east of the Champlain islands; Malletts Bay off Colchester, Vermont; the Broad Lake, which runs from the Crown Point Bridge to the Richelieu River; and the narrow South Lake. Variations in water temperature, depth and nutrient levels in these "sub-lakes" create different plant and animal habitats.

Because water quality and pollution problems vary in different locations, it is difficult to generalize about the best ways to clean-up and protect Lake Champlain, which in some ways resembles five different lakes. Nonetheless, the best strategy for protecting the lake's natural resources is to adopt a holistic approach and develop basin-wide initiatives to ensure the lake's health.

David B. McDowell, M.D., a resident of Plattsburgh, New York, points out that the importance of the lake transcends state boundaries:

We have to look at the lake as a regional asset, in the same way we consider the Adirondack Park a resource for more than its 130,000 residents. Lake Champlain, like the Park, is an asset for the entire Northeast.

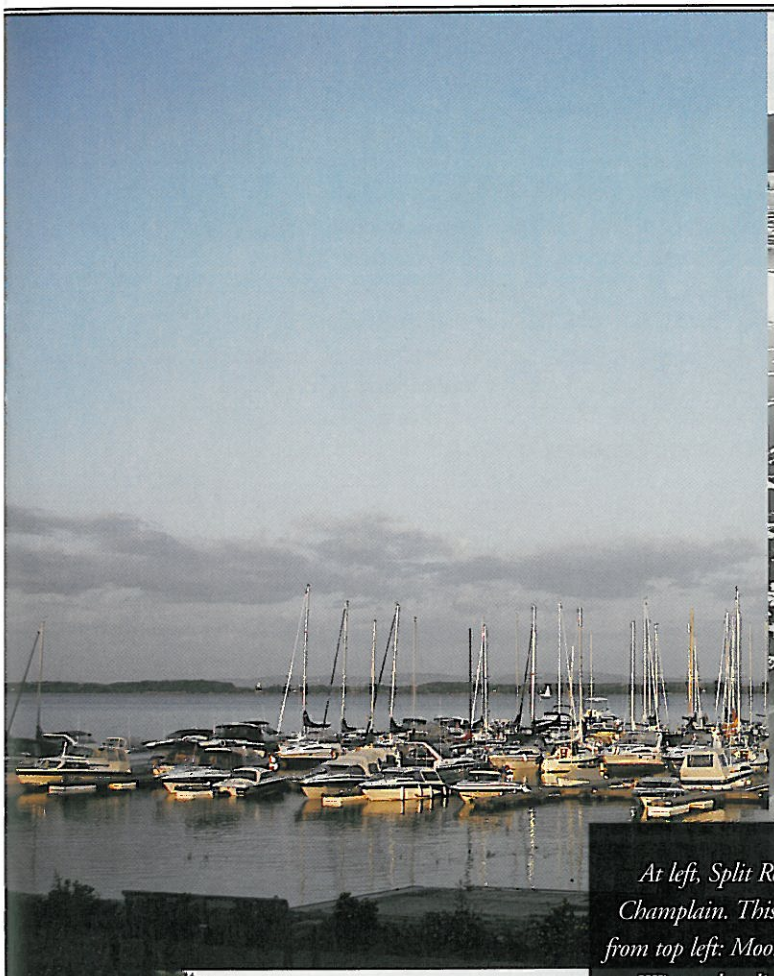
The lake that explorer Samuel de Champlain claimed for France in 1609 had several names before his. The Abenaki Indians are said to have called it "*petonbowk*," meaning "waters that lie between." Their name aptly describes the lake lying between New York's Adirondack Mountains and the Green Mountains of Vermont. Lake Champlain is 120 miles in length, but only 12 miles at its widest crossing. It reaches a depth of 400 feet below sea level between Split Rock, New York, and Thompson's Point, Vermont. Its water level is unregulated and fluctuates annually in response to precipitation and inflow from its tributaries.

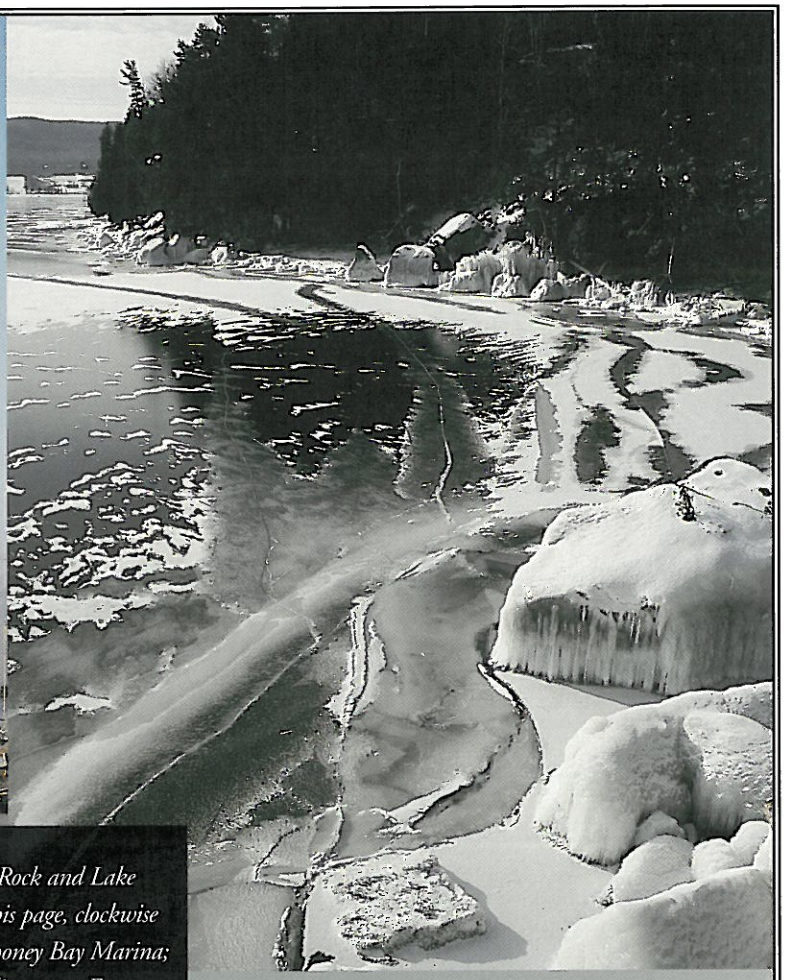
Throughout its history, Lake Champlain has served as a gateway for trade routes, military expeditions, commercial ventures, recreation and settlement. Until the beginning of the 20th century, it also served as the main route to the Adirondack Park. The lake still supports a year-round ferry service for commuters, sightseers and tourists. Peter Heininger, a Lake Champlain ferry captain, notes that this mode of transportation can provide an incredible view:

You can see this tremendous mountain range to the east, another to the west, and broad valleys and foothills reaching into the mountains beyond. Obviously, you could climb a mountain to get this type of view, but to be just passing through an area and be rewarded with a view like that is incredible. Once, on the northern crossing, I saw a meteor fall to earth. It was so radiant it seemed to be only a few miles away. It lit up the interior of the pilot house, which is normally totally dark, so brightly that I could see the expression of awe on the face of my companion.

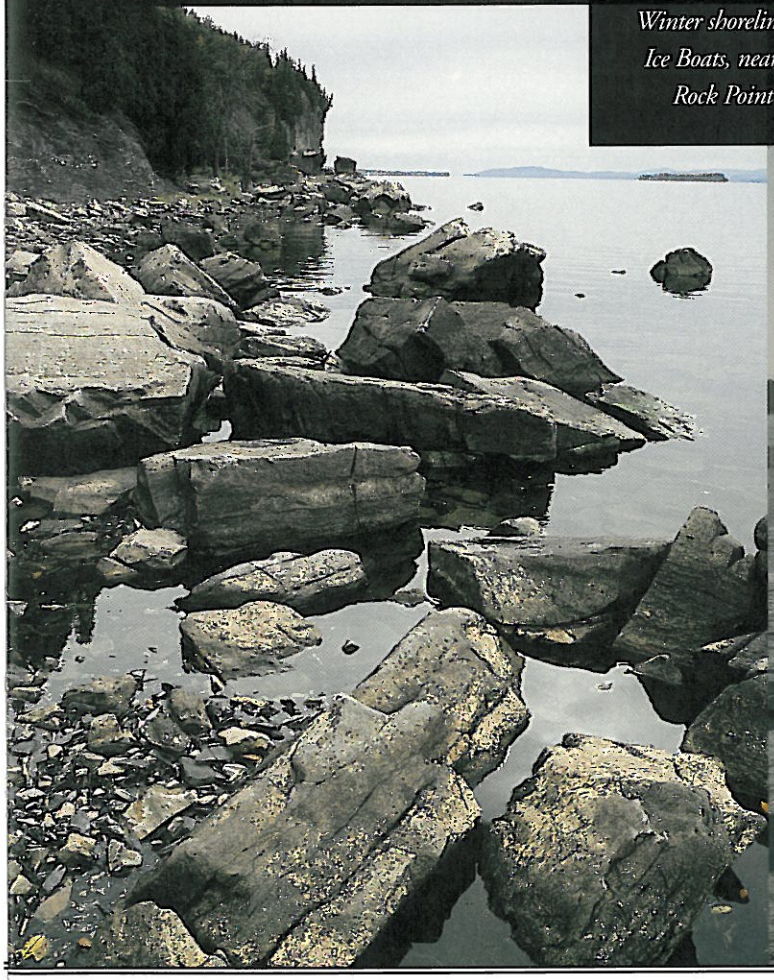
Each year approximately 6 million tourists enjoy the basin's scenic beauty and recreational resources, joining some 608,000 people who live and work in the lake's watershed. Unfortunately, the cumulative effect of recreational use is taking its toll, Heininger adds:

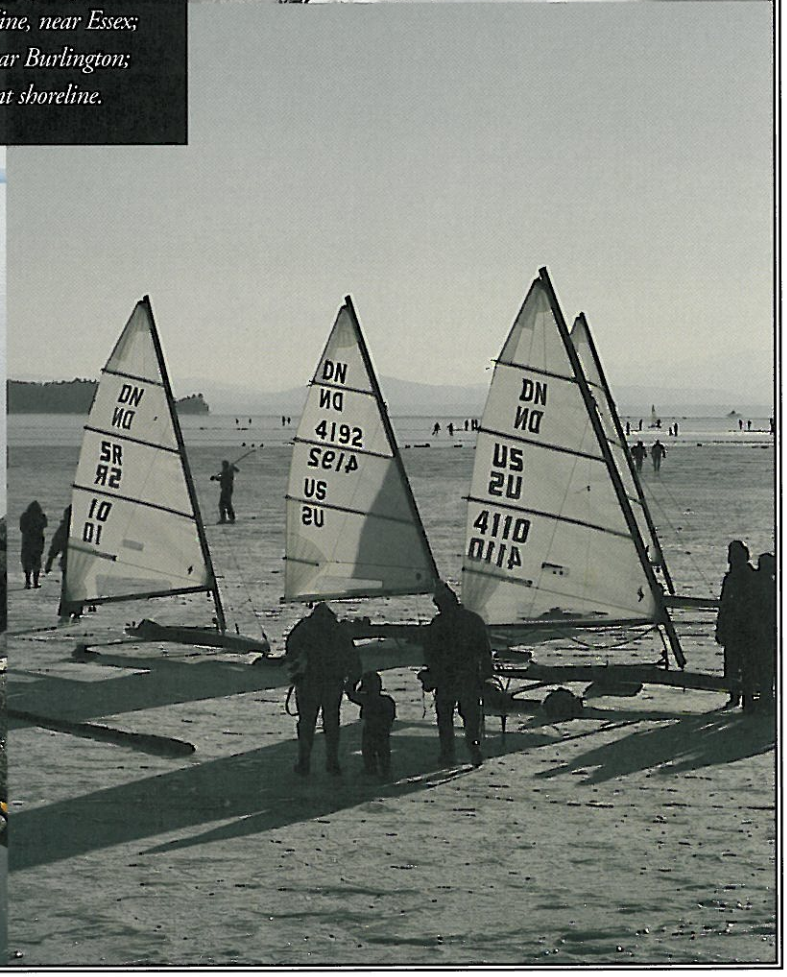
I have seen an exponential increase in recreational use on the lake, from increased boat activity to larger marinas to boat yards thick with craft in the winter. And I see a lot of jetsam washed up on the beaches, and trash floating in the water.





At left, Split Rock and Lake Champlain. This page, clockwise from top left: Mooney Bay Marina; Winter shoreline, near Essex; Ice Boats, near Burlington; Rock Point shoreline.





Lake Champlain's *Deteriorating Health*

In previous years, threats to Lake Champlain tended to be isolated and easily defined. But population pressures, and multiple and competing uses of the lake, are causing more complex lake problems. Lori Fisher, executive director of the Lake Champlain Committee, an advocacy and education group based in Burlington, Vermont, says:

In the past ten years, we have seen significant and unmistakable warning signs that Lake Champlain's water quality is in trouble. Phosphorus levels in some sections of the lake are roughly equivalent to those found in notoriously polluted parts of the Great Lakes. In the mid- to late-eighties, when we finally began testing some of the lake's fish, we found elevated levels of toxic substances in key species. Beaches have been closed due to pathogen contamination from raw sewage discharges. And industrial spills contaminated with PCBs are facts of life in the basin.

The accumulation of many human activities, none particularly damaging by themselves, adds up to significant environmental degradation.

Rivers and streams coursing throughout Lake Champlain's drainage basin deliver more than 90% of the water that enters the lake. This basin, or watershed, contains mountains, rivers, lakes, valleys, forests and wetlands covering 8,234 square miles, an area the size of the Commonwealth of Massachusetts. In turn, the lake supplies drinking water for approximately 188,000 people, which is one-third of the basin's residents.

Unfortunately, as the basin becomes increasingly paved and developed, a variety of waste products and polluted sediments are collected in runoff from building sites, roads, farms and parking lots, and conveyed to Lake Champlain.

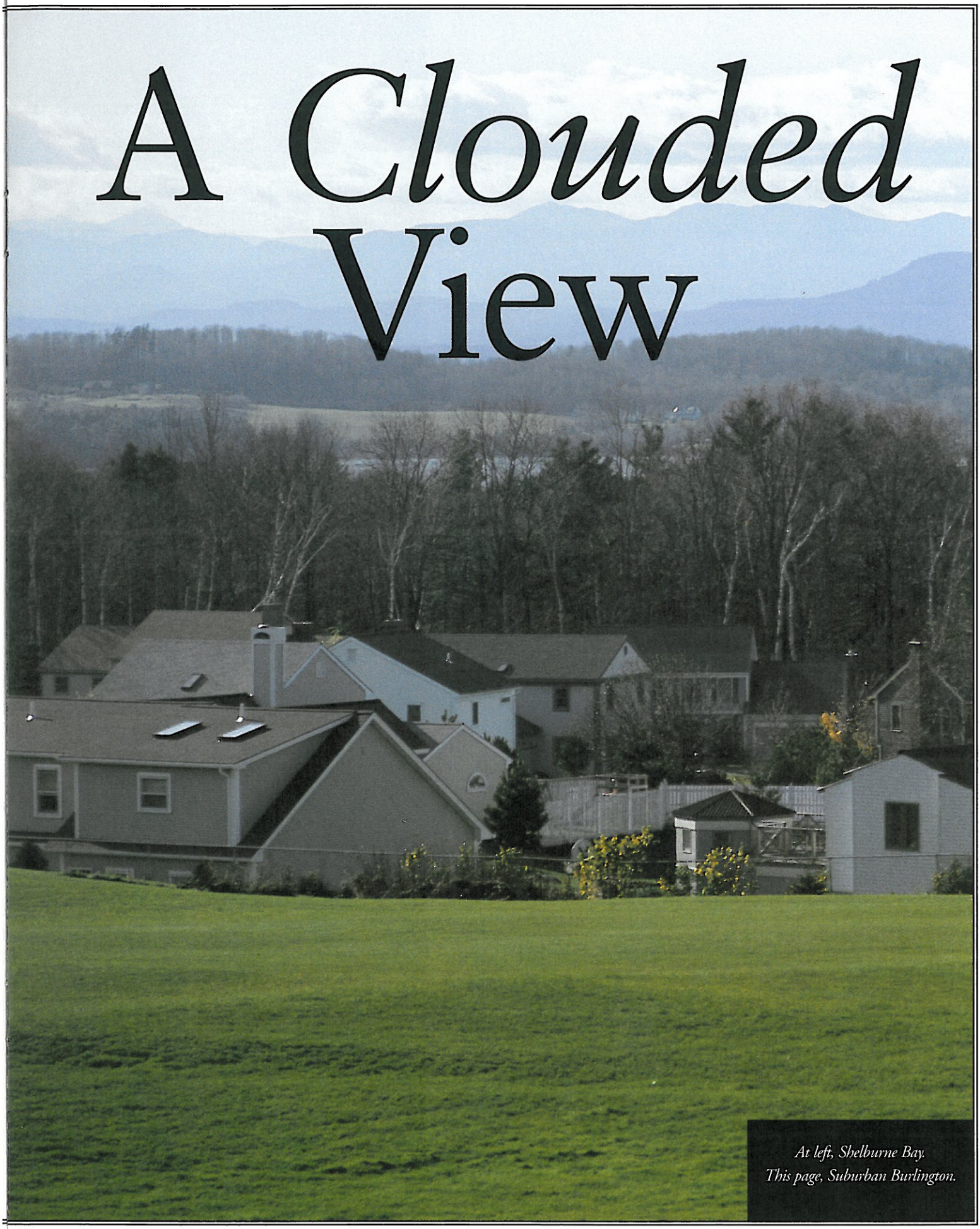
Accelerated eutrophication, or premature aging, is evident in the excessive algae growth, thick mats of weeds and deepening layers of organic muck found in many shallow areas of the lake. Pollution tends to be most concentrated near population centers and in shallow regions where tributaries enter the lake.

Ten major rivers flow into Lake Champlain. From the New York side, these include the Boquet, the Ausable, the Saranac and the Great Chazy Rivers. The Boquet, one of the steepest rivers in New York State, starts at Dix Mountain and falls 3,700 feet in its 48-mile run through Essex County to Lake Champlain.

Robin Ulmer, executive director of the Boquet River Association (BRASS), an organization formed to protect the natural resources and quality of life in the Boquet River watershed, notes that the land-use practices of the 19th century led to the severe erosion of river banks, which still plagues us today:

In the 1800s, there were many iron forges along the Boquet River, which required water power. The heating and melting of the ore required charcoal, which in turn required timbering. As a result, the whole area was denuded. Once the iron industry faded away, the riparian zone along the bank became valuable agricultural land. And in many areas, vegetation was not allowed to regrow, because farmers wanted to be able to plow to the river's edge.

A Clouded View



At left, Shelburne Bay.
This page, Suburban Burlington.

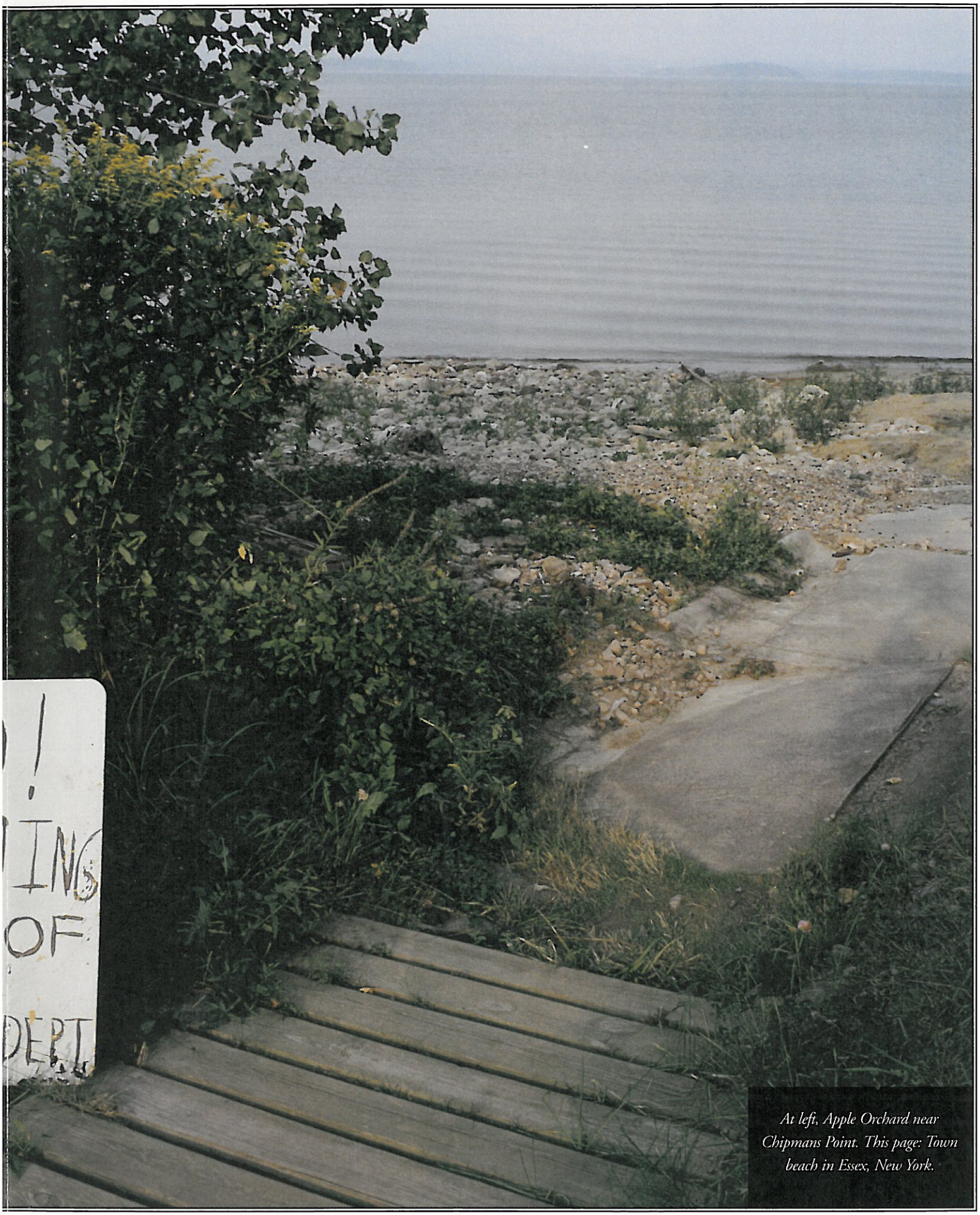
Sediments eroding from land may be the largest single pollutant of the lake. The erosion rate along logging roads and skid trails, for example, can reach 15 tons per acre. Sediments disrupt aquatic life by clogging fish gills, impairing spawning and breeding areas, and blocking light from penetrating into the water.

The Boquet carries a heavy load of sediment, causing problems for cold-water fish, such as trout and salmon. When sand packs into the cracks of the cobbles that cover the river bottom, oxygen cannot reach fish eggs and the macro-invertebrates that the adult fish eat.

Toxic Runoff

Some species of fish and other aquatic life caught in Lake Champlain, including yellow perch, American eel and brown bullhead living in Cumberland Bay, are not considered safe for human consumption, because of toxic compounds which have accumulated in their flesh. Researchers have found varying levels of mercury and PCBs (polychlorinated biphenyls) in Lake Champlain sediments. Mercury, while not a health threat at present levels to swimmers or to those drinking the water, can accumulate in the food chain and is known to cause neurological and kidney problems. Heavy metals and carcinogenic compounds can also enter the lake as runoff from parking lots, roads and landfills.

The Boquet River Association has developed a plan to control non-point-source pollution in the river's watershed. (Non-point-source pollution is diffuse pollution from water running over the land and paved surfaces, rather than from a single source, such as a pipe, dumping directly into the lake.) BRASS has also installed boxes in the Boquet to determine the quantity of sediment in the river and to gain a better sense of the river's carrying capacity.



At left, Apple Orchard near Chipmans Point. This page: Town beach in Essex, New York.

Phosphorus, a plant nutrient, is one of the most serious pollutants degrading the water quality of Lake Champlain. Excessive amounts of phosphorus are washed into the lake when runoff carries fertilizer, soil, manure and other organic material from lawns, farms and various types of development. This stimulates an overabundant growth of algae, which reduces water transparency and depletes oxygen needed by fish and other aquatic life.

Pollution from the Land

Michael Martin, executive director of the Adirondack Aquatic Institute, Paul Smiths, New York, explains the progression of degradation:

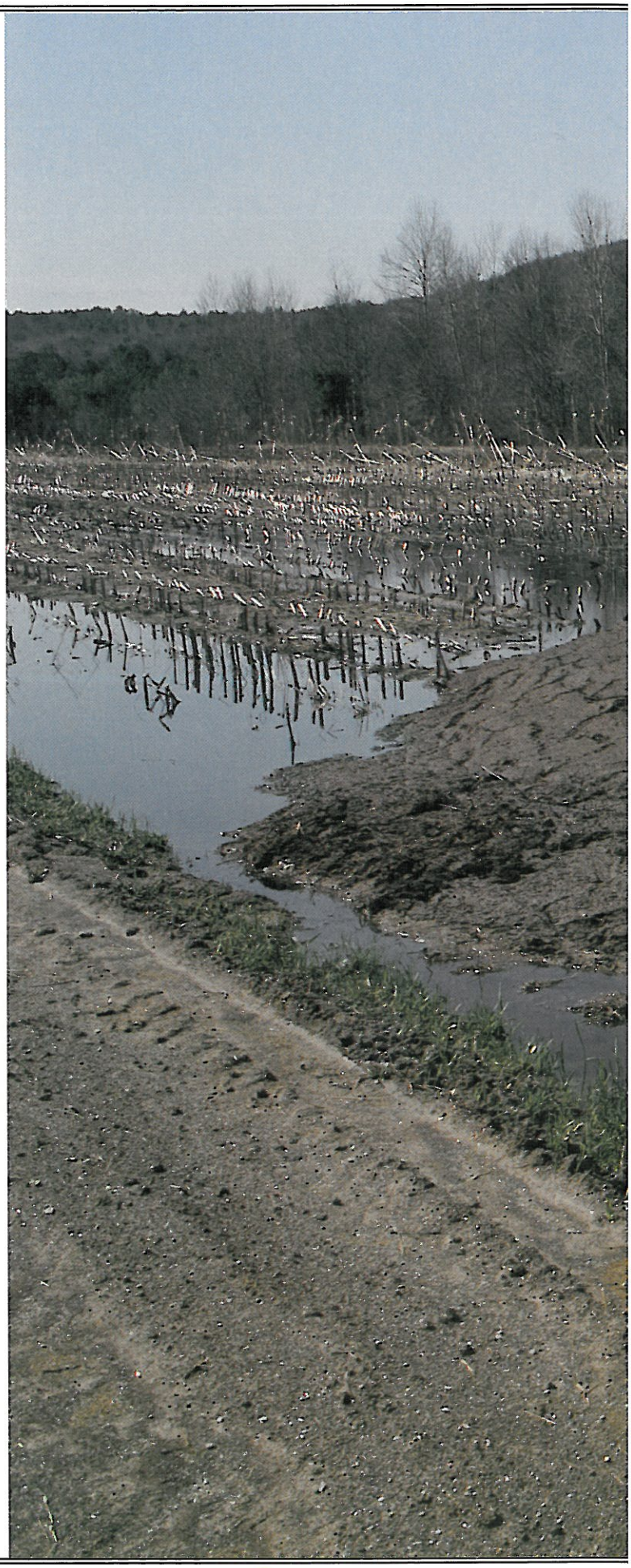
Before you see the first algae bloom, before chlorophyll becomes a problem, before you lose water clarity, the problem begins at the deepest level of the lake. Slime, consisting mainly of tiny plants, algae and microbiotic life, builds up on the rocks. Then balls of bright green algae wash around the shore. More plants grow in the sandy bottom, and soon the sand is covered with muck. Then at the deepest levels, the oxygen is lost.

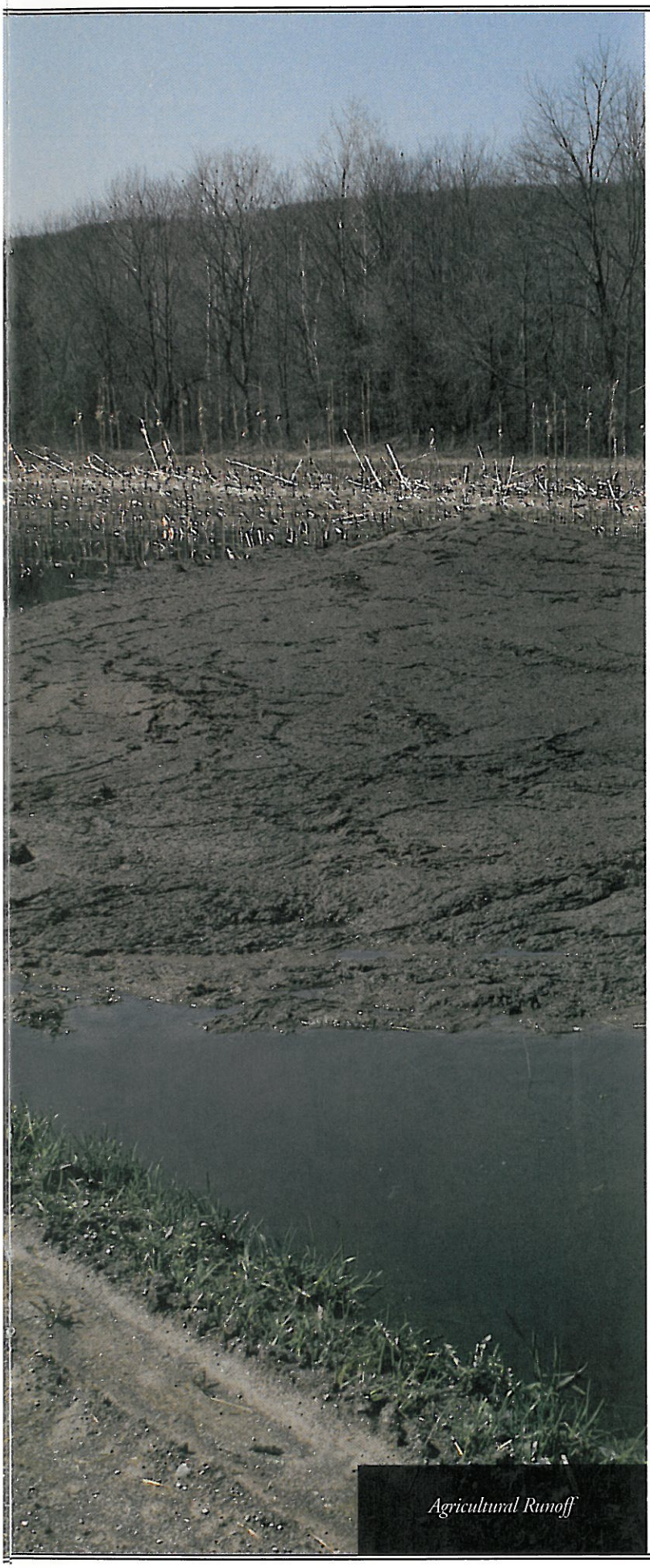
Due to its size, Lake Champlain is able to absorb a lot more pollution than most lakes. But it can not absorb everything we have been putting in it. Small land-use problems within the Lake Champlain watershed may not be that noticeable downstream. But the cumulative effect is.

Unfortunately, phosphorus levels in Lake Champlain have not been reduced, even though farm lands have been steadily decreasing on the New York side of the lake, and farmers on both sides of the lake have in large part modified their practices to reduce runoff.

Approximately 34 metric tons of phosphorus per year flow from the Boquet into Lake Champlain. Robin Ulmer notes that pinpointing the source of this nutrient can be difficult:

The Boquet is considered one of the main sources of the phosphorus that ends up in Lake Champlain. We asked ourselves: What's causing this? Is it the soils? Is it farm runoff? Faulty septic systems? Given the land use in the basin, and the lack of farms, logging, industry and population base, the phosphorus load doesn't seem justified.





Agricultural Runoff

The Lake Champlain Management Conference has funded several research programs on the transport of phosphorus in streams and on the phosphorus levels in lake sediment. Michael Martin comments:

We have to focus on the watershed, and look for the sources of water pollution problems before we try to correct them. We have to figure out what each sub-watershed can accommodate in the way of a nutrient load from non-point sources. For example, in Upper Saranac, as the nutrients from the fish hatchery are used, the north basin becomes very active with plant growth. The south basin, seven miles away, has distinctively better water quality.

New York, Vermont and Quebec agreed on a water-quality pact to establish a set of lake-wide standards for phosphorus. These standards could pave the way for reducing this nutrient in the lake. Lori Fisher suggests:

We should build on this agreement to set lake-wide standards for phosphorus, and establish a similar pact to address toxic pollution. We could institute a ten-year water-quality improvement plan aimed at reducing phosphorus and toxic pollution in the lake that would include upgrading existing sewage treatment facilities throughout the basin, resuming dye tests to pinpoint failing septic systems, and working with communities to reduce toxic discharges to the lake.

Industrial plants have located on both sides of the lake, but are concentrated on the New York side. More than one dozen sewage-treatment plants empty directly into the lake, and twice that number discharge into its tributaries. There are 332 hazardous waste sites in the basin, along with 45 active and 43 inactive landfills. With 55% of the households in the basin relying on septic tanks and cesspools for sewage disposal, the lake also receives pollution from failing septic systems.

David A. McWilliams, former selectman, Town of St. Albans, Vermont, and member of Residents for a Better Bay, says:

We have to address some fifty years of sludge build-up from an old sewage plant. The town needs to inspect all the septic systems along the bay to see that they are not leaking. If they are, they should be replaced.

In addition to continuing to improve manure management and agricultural practices, it is important to upgrade existing sewage facilities and landfills and to identify and relocate failing septic systems.

As Michael Martin explains:

Most people who harm the lake's water quality do not realize they are doing it. They may not realize that not having a septic tank pumped out regularly can harm the stream nearby, and the stream leads to a lake. When the Adirondack Park Agency (APA) tells you not to clear-cut your waterfront, you might assume it is because the APA does not want canoers to see your house from the water. In reality, the APA is trying to prevent, or at least slow down, the runoff created by your house.

Funding for improving water quality is often a problem for small towns in the Lake Champlain basin, since they have fewer taxpayers to help fund the same programs as large cities. Robin Ulmer asks:

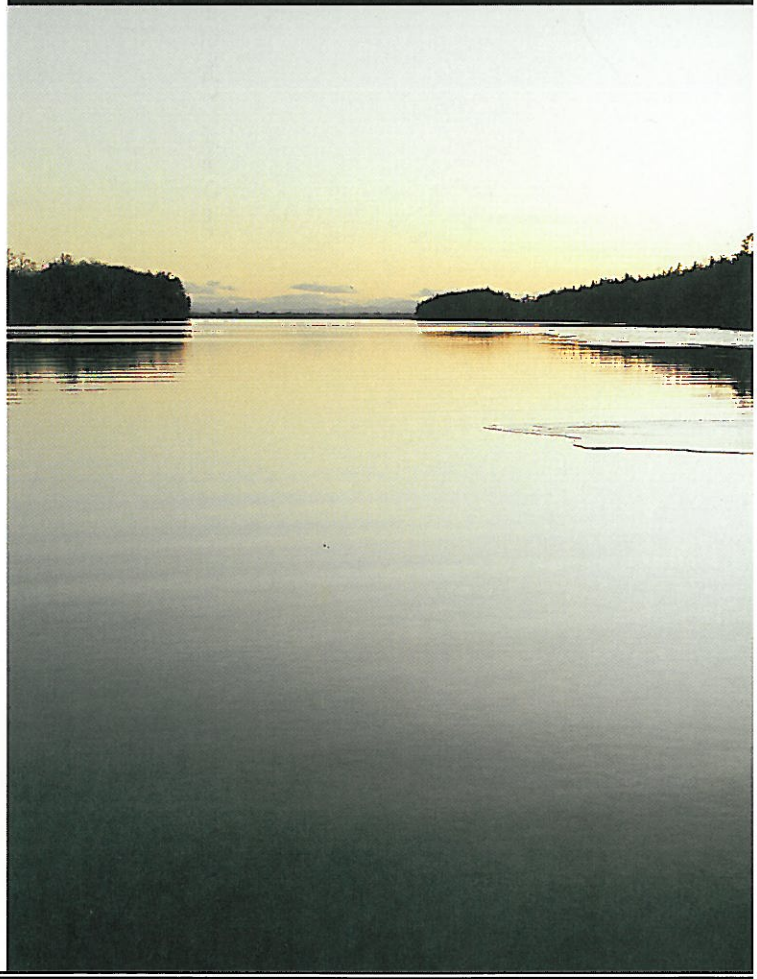
How do you pay for the preservation of water quality? If you have a failing septic tank, what does it cost to fix it? If you have clay soils, inadequate lot size or a system not designed properly, you are talking about a lot of money—even if it's just something simple like fencing cows out of the river. Not every landowner has the money for that. One solution is that Champlain National Bank offers long-term, low-interest (6.5%) loans for projects in Clinton and Essex Counties that relate to clean water, to deal with farm runoff, septic problems or ways to improve public access.

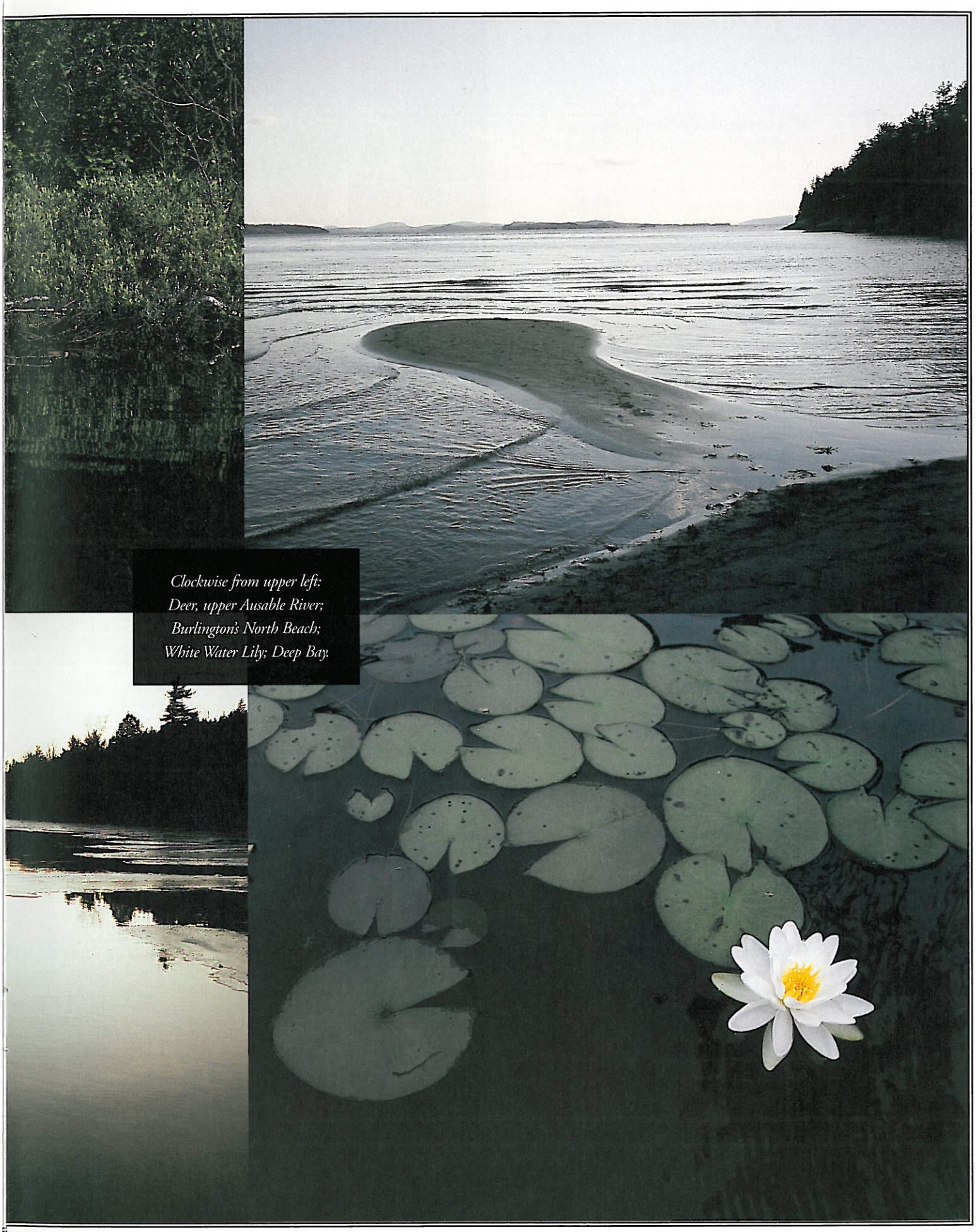
Exotic species of fish and other organisms pose problems to the health of the lake and to the economy of the region. Introduced mainly through irresponsible human behavior, these pests tend to overwhelm the diverse communities of native aquatic organisms that live in harmony and relative stability. For example, water chestnut and yellow floating heart plague the South Lake. Eurasian watermilfoil, now found in shallow areas throughout the lake, is especially prevalent in St. Albans Bay. These nuisance weeds persist in spite of repeated efforts to reduce their infestations.

Zebra mussels attach to hard surfaces, clogging water-intake pipes and permanently covering buoys, boat hulls and rocky beaches. This prolific fresh water mollusc eats by filtering microscopic plants from lake water.

Michael Martin believes that more education is needed about exotic species and how they can change ecosystems. He says:

I have seen purple loosestrife progress along the Saranac River all the way through Bloomingdale and points east. Loosestrife is very beautiful. But, it is wind-spread and wind-fertilized, and it moves into wetland areas and chokes out all of the other plants. I have even seen people cultivating it in their yards. I wonder if they know what harm it does?





Clockwise from upper left: Deer, upper Ausable River; Burlington's North Beach; White Water Lily; Deep Bay.

A Brig

In 1989, when the United Nations designated the Adirondack Park and the Lake Champlain basin as an International Biosphere Reserve, it recognized the area's unique natural and cultural resources. Similarly, the passage of the 1990 Lake Champlain Special Designation Act by the U.S. Congress focused attention on Lake Champlain and provided much-needed federal dollars for study and action on lake problems.

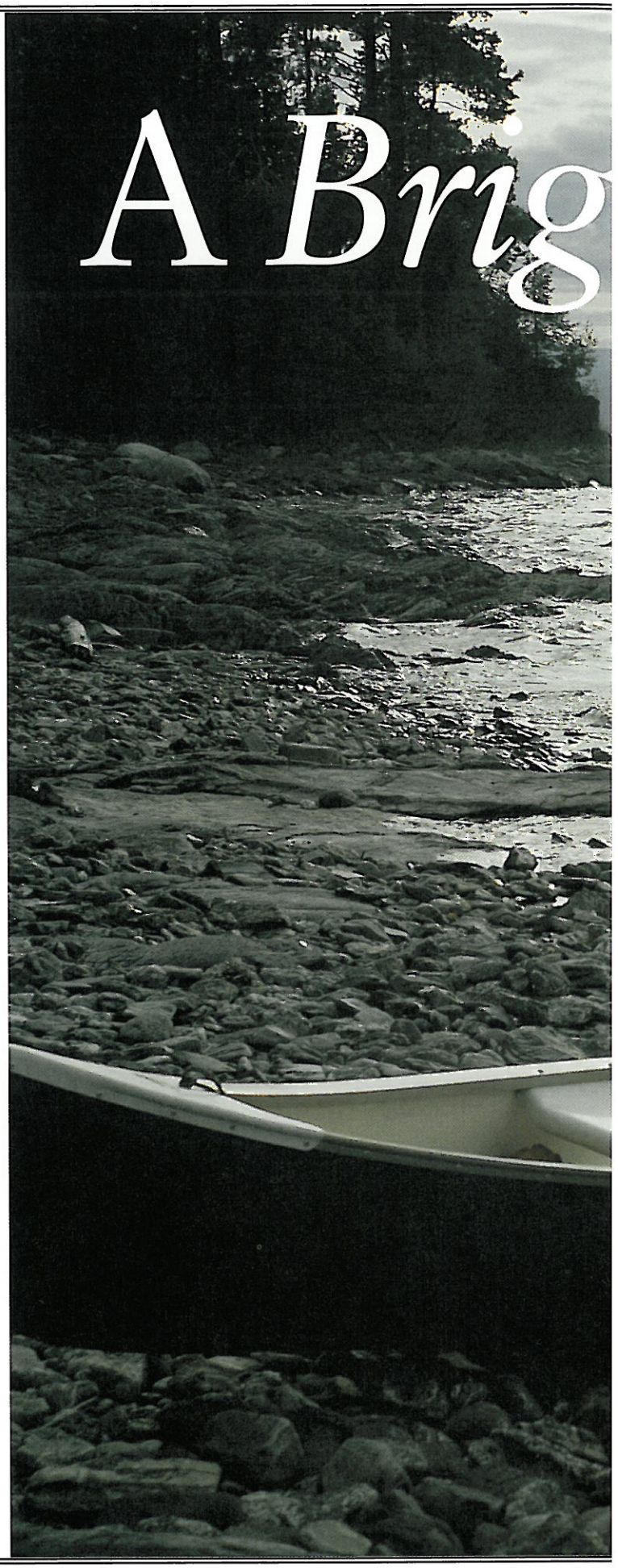
But some people maintain that despite the attention now being paid it, Lake Champlain remains an understudied lake. For the past decade there was no ongoing, comprehensive data collection or monitoring program on the lake.

A Unique Resource

Lori Fisher says:
The extent of bacterial pollution in Lake Champlain is unknown. We are only beginning to get a handle on the toxic compounds in lake water, sediments and fish, or to understand how phosphorus acts to trigger algae blooms in different sections of the lake. And basic information on recreation, such as the number of public rights-of-way to the water and the number of boat slips and moorings on the lake, is also subject to dispute. Lake Champlain needs an ongoing research and monitoring program so that we can act on our water-quality problems and track improvements.

Michael Martin agrees that there is not enough background information available on New York State waters, including those that feed into the lake:

Even with the information collected by the New York State Department of Environmental Conservation, the U.S. Fish and Wildlife Service and the Adirondack Lakes Survey Corporation, we don't know much about the water quality or the nutrient states of about 75% of the lakes in the Adirondacks. The early studies mostly looked at fish. They were done in the St. Lawrence Valley, the Hudson Valley and the Champlain Valley. Other studies looked at algae, dissolved oxygen and transparency. But we still need a lot more information.



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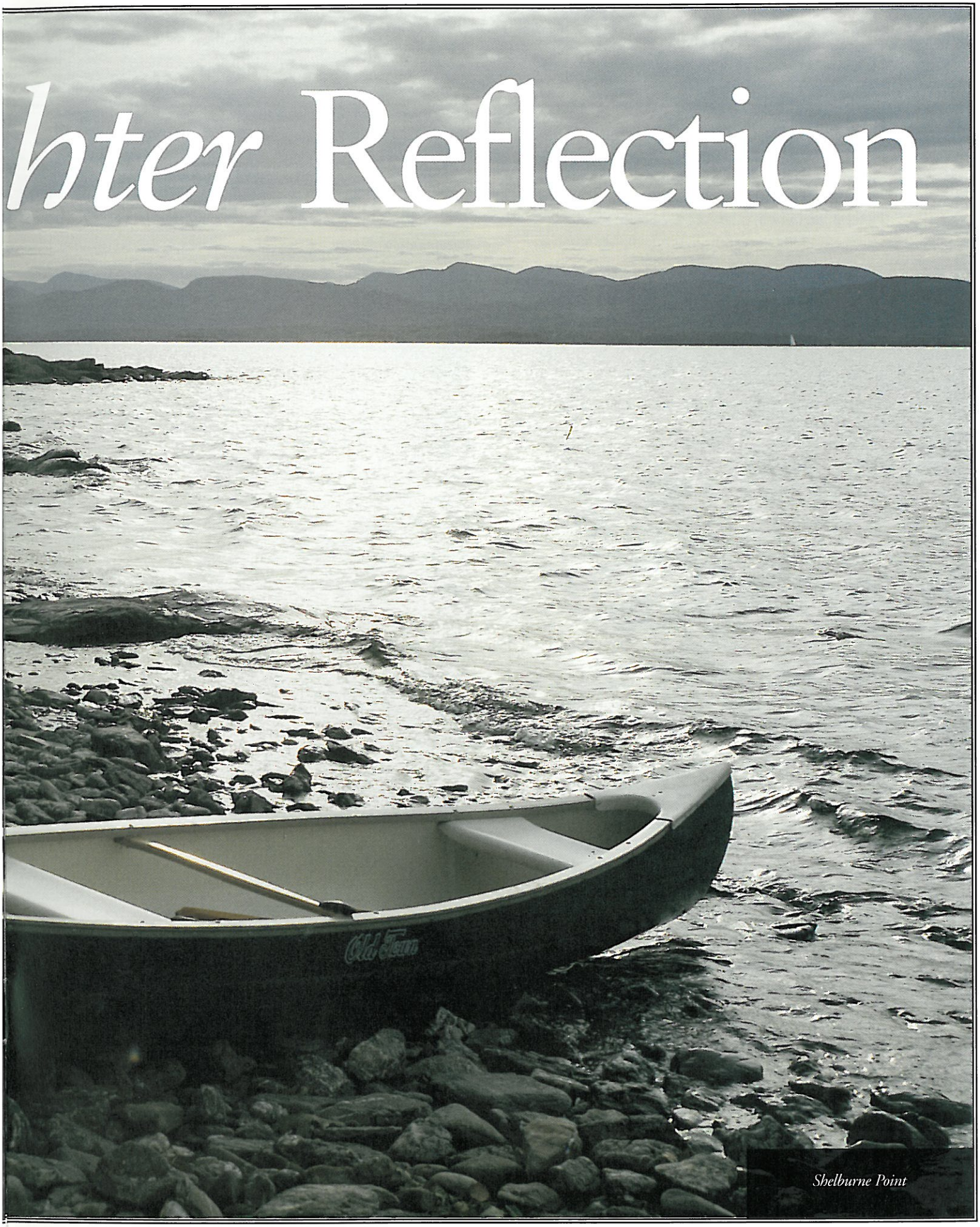


Shelburne Point

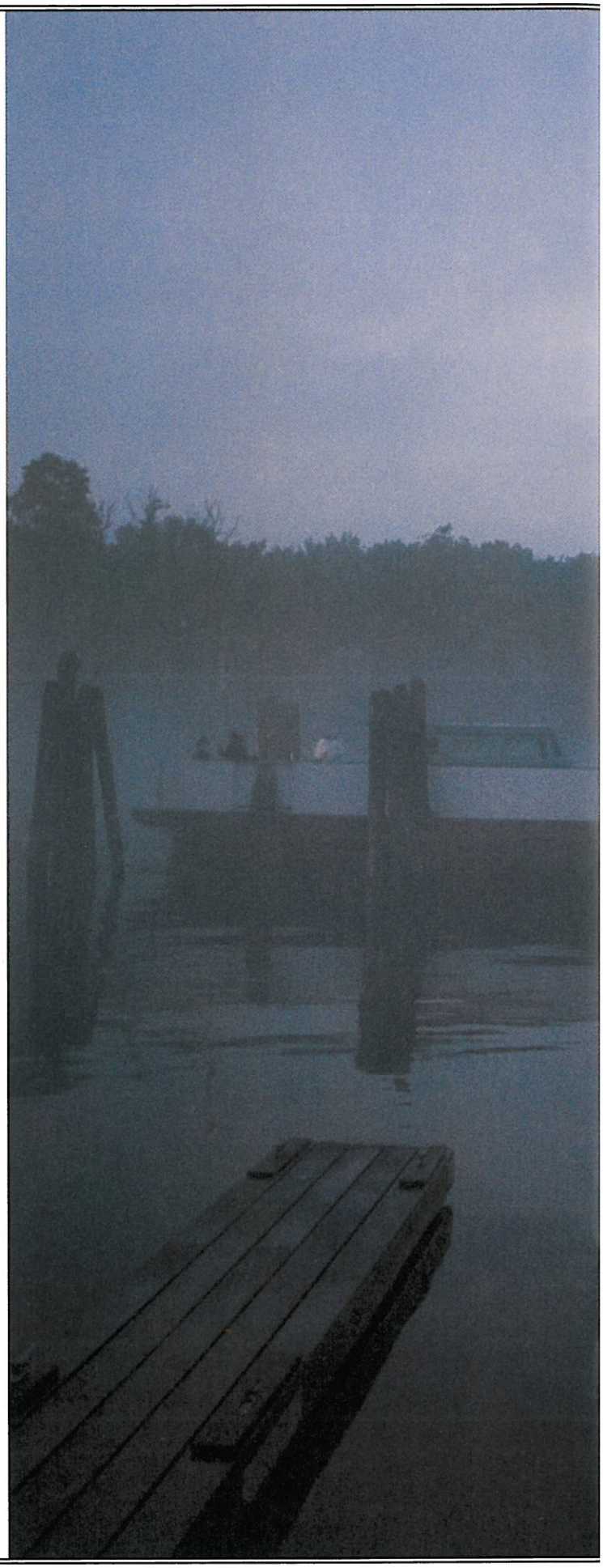
The Adirondack Council works with local economic development organizations to encourage growth in the Lake Champlain basin that is compatible with environmental protection. David B. McDowell, M.D., of Plattsburgh, New York, believes that the future of the Lake Champlain region is tied to planning for responsible growth:

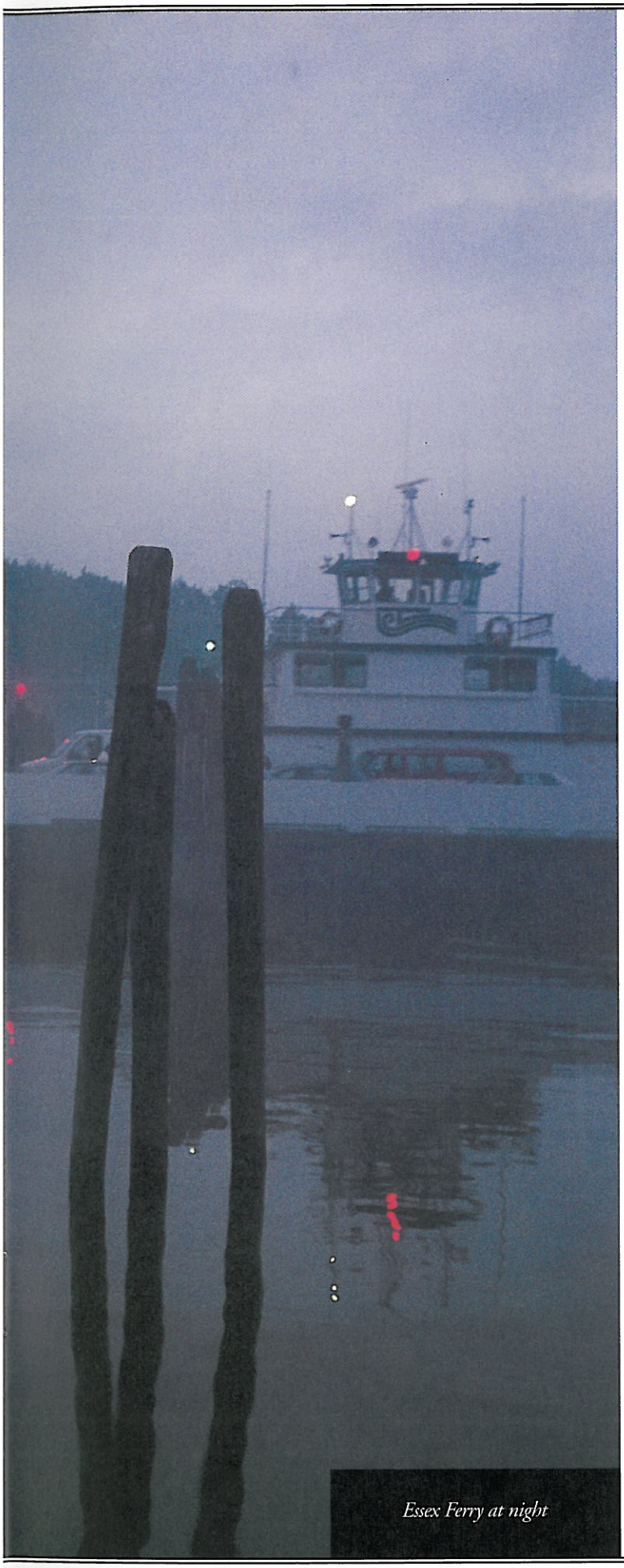
We have to help environmentally responsible industries open and survive here. We should be producing more than just service, sales revenues and consumers. What is going to happen when the retail "bubble" breaks? What are we going to have left if the shopping malls fail? There has to be some type of planning for growth that takes appropriate population densities into account.

Planning for the *Future*

As manufacturing declines as an economic mainstay of shoreline communities in the Northeast, some people urge the development of "green tourism" as a sustainable enterprise.

Robin Ulmer of the Boquet River Association says:
People could come to the area in a special way—by barge or by train, for example—and camp, and learn about what we are doing to protect the resources here. We could teach about the reintroduction of the peregrine falcon and eagle, show tourists unique habitats and teach them about sustainable agriculture and forestry. We have many local people who are proud of the area and could provide a service like this. This type of tourism works well with Bed & Breakfast establishments, farm bunkhouses and general stores, all of which reflect the nature of our communities. We can do it. We just have to try!





Essex Ferry at night

The Lake Champlain Management Conference has developed a plan to control pollution and restore the health of Lake Champlain. Continued citizen involvement is needed to ensure successful implementation of the plan.

There is still much to be done on both sides of the lake to promote responsible land use and protect remaining wild places.

Working *Together*

Peter Heininger comments:
When you look at Vermont from the lake, everything is private: houses and docks and "keep-out" signs. When you look at the New York side, it can still be called wild, especially from Willsboro Point south. Split Rock is the only portion of either shoreline that is totally wild.

In fact, 80% of the private land on the New York shore of Lake Champlain is subject to the project review and permitting authority of the Adirondack Park Agency (APA). Unfortunately, the APA's shoreline regulations are too lax. Some development activities and building densities that are permitted need to be re-evaluated in order to better preserve shorelines and water quality.

A major threat both to the economy and the environment of the Lake Champlain basin is the loss of privately-owned "working forest" lands, including shoreline properties, to speculative subdivision and development. The Adirondack Council is focusing on changes needed in timber-tax abatement programs and other incentives to ensure that open-space resources, such as these forest tracts, are preserved.

In this way, the forests continue to provide valuable forest products and jobs for Adirondackers. They also prevent pollution of the watershed from development.

To restore the health of Lake Champlain and enhance its many public and private values, it is necessary to make a number of changes in the ways we treat the lake itself and in the ways we develop and manage the 8,000 square miles of land within its drainage basin. The Adirondack Council will continue to work with the Lake Champlain Management Conference and others to implement a bold, visionary plan that accomplishes these goals. At a minimum, we believe we must:

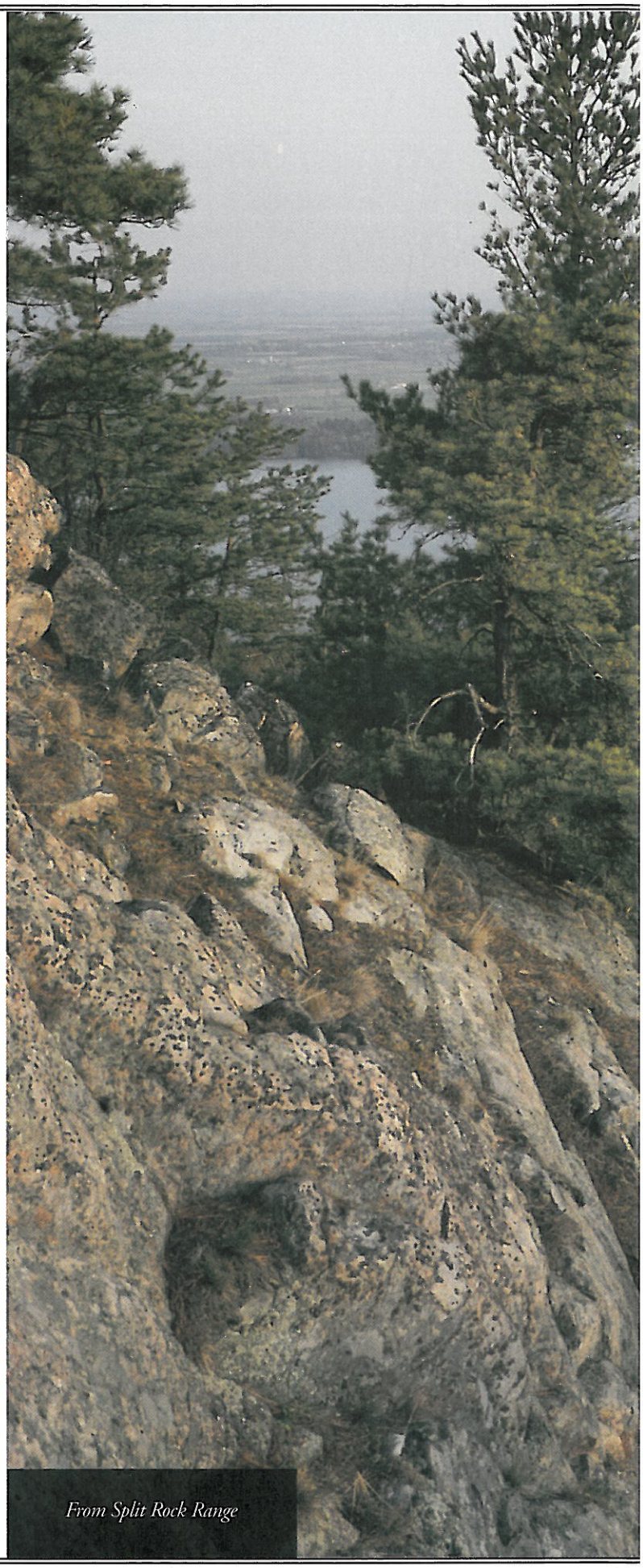
PROTECT IMPORTANT UNDEVELOPED TRACTS OF LAND on the shoreline of Lake Champlain and in environmentally sensitive areas of the lake's basin to prevent pollution, provide wildlife habitat and enhance recreational opportunities.

A Plan for *Action*

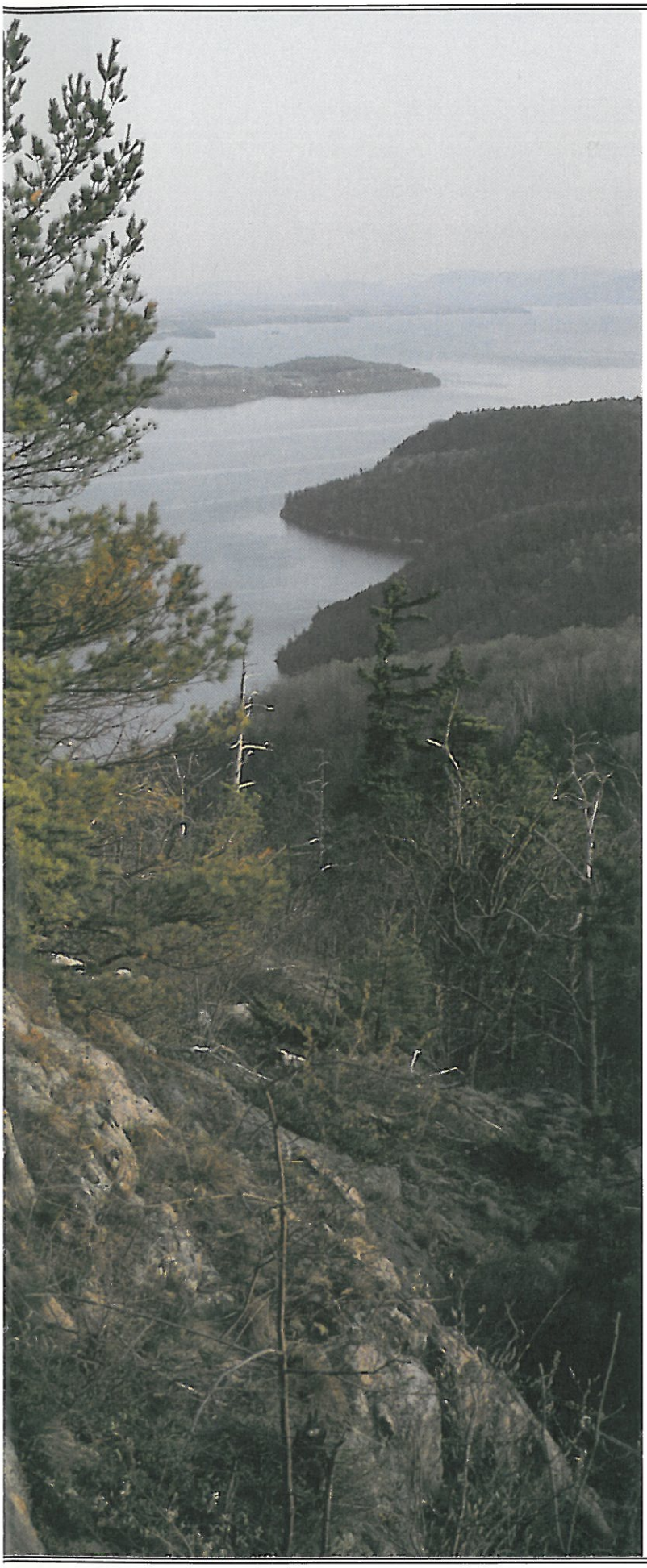
CREATE A PACKAGE OF PROGRAMS AND INCENTIVES for private landowners, corporations and municipalities that will control runoff from farms, forests and developed areas to minimize pollution from soil erosion, fertilizers, toxic substances and pathogens.

ENCOURAGE AND PROMOTE LOCAL LAND-USE PLANning that includes zoning and open-space protection provisions that balance the need for focused growth and sustainable economic development with the need to protect the public and private values of Lake Champlain.

CREATE AN INDEPENDENT BODY WITH THE AUTHORITY and responsibility for coordinating the implementation of the plan. Implementation should be based upon a holistic, ecosystem approach to lake management. It should consider the true costs of pollution clean-up and prevention, including the costs of delaying or avoiding necessary actions altogether, and the value of lost opportunities associated with decimated fisheries, closed beaches and declining tourism.



From Split Rock Range



If you are not already a member of the Adirondack Council, or if you are a member but have not yet become an activist who writes letters and advocates on behalf of the Park and Lake Champlain, please consider joining the Council's Activist Network. As an activist, your letters, calls and visits to legislators, the media and friends will be joined with the voices of other concerned citizens from around the region. Together, we can achieve our common goals for a clean, beautiful, healthy Lake Champlain for ourselves, for our children and for generations yet to come.

Join the Council's *Activist Network*

David A. McWilliams, a former St. Albans town official, points out that an informed electorate is necessary to preserve natural resources:

We have to elect officials who care about planning and the future of this community. The rest of the lake should learn from St. Albans Bay that it is easier and less expensive to prevent a problem than it is to clean up a crisis. People need to see what happens when not enough is done, soon enough, to protect the lake. This lake is our future; and the bay is our life. When we take clean water from the lake and put polluted water back, we are destroying our future. Are we willing to make sacrifices? Are we going to speak out?

For more information about joining the Council's activist network, please contact:

Lisa Genier, The Adirondack Council,
342 Hamilton Street, Albany, New York, 12210,
(518) 432-1770.

The Adirondack Council is a nonprofit organization dedicated to preserving and protecting New York State's six-million-acre Adirondack Park, a unique mix of state-owned Forest Preserve land (42%) and private holdings. We protect wildlife, plants, air quality, water purity, undeveloped shorelines and the unique open-space nature of the Adirondacks through education, media, advocacy and legal action when needed.

The *Adirondack Council*

As the largest environmental group in New York State working full-time to preserve the Adirondacks, the Council has 18,000 committed members who fight for planning and judicious use and conservation of this great Park, and for public policies to protect its assets. Founded in 1975, the Council is currently celebrating 20 years of activism and education on behalf of the Adirondacks.

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