

Blending biodiversity and people in the Adirondacks

John Sinclair, October 2011

The Adirondacks Park in upper New York State covers some 6,100,000 acres (25,000 km²), a land area greater than the state of Vermont and bigger than Kakadu National Park (19,804 km²). It is fifteen times the size of Fraser Island (1,660 km²). The Park is larger than Yellowstone, Yosemite, Grand Canyon, Glacier and Great Smoky National Parks combined. The Adirondacks comprise about 26 percent of the entire land area of New York State.

The Park was established in 1892 and has grown from 11,000 km² in 1900 to its present size of which 9,700 km² or 40% is privately owned and which supports a resident population of 130,000 people living in dozens of villages and towns. The Adirondack Park covers a mountainous area of stunning beauty, especially in Autumn. The land has been largely shaped by recent glaciation that helped create over 3,000 lakes. The mighty Hudson River and many streams have their headwaters in these mountains. The Park is criss-crossed by 7,000 miles of road and 3,000 miles of hiking trails and being near some of North America's largest cities it is a major recreation area.

I had two objectives in deciding that the Adirondacks Park should be our principal destination in which to experience an American Fall. Apart from being renowned as having along with Maine and parts of Vermont the most spectacular display of Autumn foliage. In 1975 a friend, Peter Stanton, was commissioned by the Fraser Island Defenders Organisation to produce the first ever Management Plan for Fraser Island. He had recommended that the Adirondacks could be the best model for managing my favourite place on Earth because it allowed nature conservation and recreation to co-exist. Although the Queensland Government spurned Peter's suggestion and left no option other than to replace the State Forest with National Park the name Adirondacks and its enormous Park has had me curious ever since. Thus I decided that the Adirondacks should be our destination in the Fall of 2011.

The vast Adirondacks Park I realized had much in common with English National Parks because they are managed to preserve the biodiversity and landscape values even while encompassing towns and villages with much of the land in private ownership and incorporating farms, roads and other infrastructure and artefacts of modern living. Having just experienced how well the landscape values of the English National Parks had been preserved in contrast to the destruction of the landscape values of Fraser Island's best-known attraction, Lake McKenzie (Boorangoora) in a World Heritage site, through negligence and mismanagement. Thus the prospect of gaining any new ideas for preserving landscapes was high on my agenda.

The Adirondacks Park was established in 1892 to help arrest the environmental degradation then occurring in the mountains. The area close to the mighty St Lawrence and Hudson Rivers was accessed early in the colonization of North America and the environment was quickly exploited by loggers moving into the forests and using the many rivers to transport the logs to downstream processing mills. New York businessmen were so concerned that logging on these steep mountain slopes might result in the silting up of the Eerie Canal that was the main economic generator for New York City that they advocated for over a decade to have the Adirondack Mountains protected from unsustainable practices. It was business interests that were responsibly primarily for such a vast park. However the Park has grown since it was created. The area has more than doubled from 11,000 km² in 1900 to 24,000 km² in 2000. Despite this increase in size, during the same period the permanent resident population increased by only 30% from 100,000 to 130,000.

In 1900 43% of the park (4,900 km²) was in State ownership. One hundred years later the percentage of state owned land within the park had shrunk to 40% (9,700 km²). However much of the privately owned land is now held by various trusts from conservation purposes. The biggest changes are reflected in the exploitation. In 1900 there were 92 sawmills, 15 iron mines, 10 pulp/paper mills. Lumbering has been much restricted since the establishment of the Park. One hundred years later there were 40 sawmills and just one pulp mill. However a legacy from this industrialization is seen in the elevated mercury levels in the lakes which has been exacerbated by acid rain generated in southern states of America.

The human population of Adirondacks need to be seen not only in the number of permanent residents. The major industry is recreation and about half the houses are not permanently occupied and used for recreational purposes only. Being so close to major population centres it is the venue for many holiday camps used during the summer and its ski resorts at Lake Placid have hosted two winter Olympic Games. Thus the Adirondacks provide recreation for millions of people annually in summer and winter. We were attracted to the Adirondacks in Fall with our visit coinciding with the annual Columbus Day long weekend because, with Maine and Vermont the Adirondacks provide the most stunning displays of Autumn foliage. However some holiday resorts had already shut down for the season and there seemed to be no great volume of tourist traffic.

Two agencies that manage the Park to achieve the impressive conservation outcomes. The New York State Department of Environmental Conservation (DEC) is responsible for the care, custody, and management of the public (state) land in the Adirondack Forest Preserve, while since 1971 the Adirondacks Park Agency performs long-range planning for the future of the Adirondack State Park. Development by private owners must be reviewed to determine if their plan is compatible with the park. It oversees development plans of private land-owners, as well as activities over State owned land. This is almost entirely achieved through detailed zoning plans and accompanying policies. While the Agency is regularly embroiled in some conflicts over its ruling the outcome of its overall management is applaudable.

Apart from its responsibilities for the conservation measures on State owned land, the Department of Environmental Conservation is also responsible for regulating fishing hunting and trapping and for environmental law enforcement.

Impacts on the Adirondacks' Biodiversity

The Adirondacks and the chain of Appalachian Mountains have been the most biodiverse parts of the whole of the United States. Approximately 260 species of birds have been recorded in the Adirondacks of which over 170 breed there. The Adirondacks Park suffered a progressive loss of biodiversity for the first sixty years of its existence. The prevalent use of DDT throughout North America wiped out its resident populations of Peregrine Falcons and Bald Eagles. The fur trappers had decimated many of the mammal species and many were extirpated including the top order predator the wolf. While overall the forest cover has generally improved as a result of more protection the composition has been impacted by introduced pests and diseases. Chestnuts, once dominant were wiped out by fungal attacks; Elm trees succumbed to Dutch-elm disease; and the spruce fir-forests are suffering from fungi that are killing thousands of trees. The effect of acid rain has been to lower the pH within the lakes releasing more of the mercury which then affects the fish populations. The Americans have wisely chosen to use the term "invasive plants" rather than term "weeds". These are also impacted both the terrestrial and the aquatic environments.

Yet despite these threats and sad outcomes there are many happy stories to report on gains in biodiversity. As a result of land management some species have self reintroduced themselves

back into the Adirondacks. The most spectacular of these is the moose. Whereas early attempts to reintroduce elk failed, the moose that had been extirpated found their own way back and are now established. Although the wolf hasn't made a comeback, the niche once occupied by the wolf was filled by coyote. The Adirondacks coyote was noted to be larger than other coyotes and to have developed hunting patterns similar to those used by wolves. Recent DNA sampling has confirmed that although wolves have not returned the Adirondacks coyotes contain some DNA of wolves through hybridization. All of this has been established while a great public debate rages over whether pure-bred wolves should be reintroduced into the Adirondacks.

There are already 53 species of mammals that live in the park. There have been other mammals reintroduced or proposed for reintroduction including fishers. Ongoing efforts have been made to reintroduce other native fauna that had been lost in the park during earlier exploitation including the American beaver and the Canadian lynx.

Some birds and mammals have been successfully reintroduced including the Bald Eagle that can now be seen soaring over the lakes and mountains and they are now so well re-established that no further nurturing is required. Following the loss of Peregrine falcons they have since self-reintroduced and are now secure again. There are also on-going efforts to re-establish Osprey in the Adirondacks.

Because of environmental regulations, the large tourist population has not overfished the area. However fishery has suffered from some environmental changes.

From the late 1800s to the present, humans introduced non-native fish throughout the Adirondacks. Fish including largemouth and smallmouth bass, yellow perch, northern pike, golden shiners, rock bass, black crappie now dominate the region's lakes and ponds. Such introductions have been detrimental to both brook trout and round whitefish because of increased competition and predation. Historic, unique, and natural fish communities are becoming rarer, having been replaced by fish that out-compete and/or consume brook trout, round whitefish and other native fish. Round whitefish are now listed as endangered in New York State, and some Adirondack heritage strains of brook trout have been lost or are now limited to just a few bodies of water.

Non-native fish out compete brook trout and other native fish by consuming large quantities of zooplankton and other native fish prey food resulting in a decrease in the amount, size, and type of zooplankton populations in the waters. Reduced amounts of zooplankton, which feed on algae, mean less available food for native fish and more algae and algal blooms.

Historically, 94 percent of the water area in the Saranac Lakes Wild Forest contained brook trout. Today, that has declined to only about 3 percent of the area - due primarily to non-native fishes. Most of the remaining brook trout waters are a result of management efforts, including pond reclamation, stocking and liming. The reference to liming is to try to increase the pH of the waters both to provide a healthier fish habitat as well as to try to reduce the impact of mercury.

A multi-year study of the health of New York's loon populations shows that roughly 17 percent of all loons have unsafe mercury levels in their blood and feathers. The Adirondack Council has been urging Congress to pass legislation that would curb the power plant smokestack pollution that causes acid rain, much of which also contains mercury. In the Adirondacks, airborne mercury combines with mercury that is chemically released from lake sediments and rocks by acidic water, multiplying the contamination danger. Mercury is

absorbed by the bodies of fish and thus animals that eat fish interrupting organ function and reproduction, and damaging the nervous system

The impact of Invasive weeds seems to have been heavier in aquatic areas. However due to the strength of the hunting/fishing culture in America strong efforts are now underway to combat and control aquatic invasive species.

It has not been possible for this paper to get quantified statistics on the increases in the biodiversity in the Adirondacks beyond the examples cited above. Further the numbers of invertebrates and reptiles have not been accounted for.

It appears that there is now universal recognition of the value of marshes in the Adirondacks. These are regarded by everyone I met as the most sacrosanct of all of the habitats and this in part is a recognition of the value of invertebrates that congregate there and for the critical part they play in the ecology.

I was struck by the theme of the increasing biodiversity of the Adirondacks during a visit to the magnificent Wild Center, the Natural History Museum of the Adirondacks. The avenue leading into this very brilliantly presented interpretive centre listed the species that had become extinct in the Adirondacks and of those that had subsequently become re-established. They impressed that the Adirondacks Park has increased its biodiversity over the past 50 years. Unfortunately the data to support this claim isn't easily established despite the evidence in favour.

The Wild Center though is a magnificent example of community cooperation. It was built as a result of community fund raising and subscription. The concept was only first envisaged in August 1998 and in February 1999 it became an official organization. In July 2004 after raising \$28.3 million from 14,808 donors the ground was broken on the 31-acre site at Lake Tupper that had been donated by the community that overwhelmingly supported the scheme in a referendum. Two years later in 2006 the Wild Center opened and drew huge crowds. They eclipsed its five-year single day projections on ten different days in its first 60 days of operation. That epitomized the community support that justified the State's \$2.5M contribution. The community support given to the Wild Center in many ways epitomizes the community support for the preservation of the natural values of the Adirondacks and indicates just why it is that if there is an increase in the biodiversity of the Adirondacks it is because of the community enthusiasm to make it happen. The Mission statement for the Wild Center is to: *Ignite an enduring passion for the Adirondacks where people and nature can thrive together and set an example for the world.*

There was a lot of loss of biodiversity in the Adirondacks leading up to the second half of the twentieth Century. However since then there has been a concerted effort by government agencies and the community to claw back this loss. My observations of the Adirondacks Park after spending an inquisitive week there is that this mission is shared by the community and the other agencies responsible for managing the park and they have achieved creditable success in the achievements to protect the biodiversity to date.