

# HISTORY IS STILL IN THE LAND: UNDERSTANDING THE UNIQUE ECOLOGY OF NEVIS:

## A SMALL ISLAND IN RECOVERY FROM SUGARCANE

A foundation needs to be established in order to gather a modicum of comprehension of the current 21<sup>st</sup> century environmental status of the island of Nevis, West Indies. This necessitates presenting a basic lesson regarding the geological and ecological history of Nevis and ultimately coming to an acknowledgement that profound degrees of destruction in the Colonial Period were inflicted upon almost the entire physical environment of Nevis, from which there has been very little recovery in more than 500 years.



As they generally appear now the islands of the Lesser Antilles were formed as features of land through long and complex geologic processes involving plate tectonic movements over the face of the planet. These included tectonic plate uplift and subsidence, volcanistic activities, coral formations, and sedimentations. Tectonic plates are large plates of rock that make up the foundation of the Earth's crust and the shape of the continents. The tectonic plates comprise the bottom of the crust and the top of the earth's mantle. There are ten major plates on earth and many more minor ones. They float on a plastic-like part of the earth's mantle called the asthenosphere. The plates are most famously known for being the source of earthquakes and volcanos. The island of Nevis is part of the inner arch where two major plates collide (the Atlantic Plate and the Caribbean Plate) and sub-duct (one going beneath the other). This subduction creates (yes creates – it is all an ongoing process) the volcanic island of Nevis and the other large inner arc islands and created the outer arc islands of the Lesser Antilles. This is an ongoing process that began in earnest circa 23 million years ago and persists to the present day.

We should refer to things as they properly are, and to that point, Nevis is situated entirely within the Antillean-Caribbean Sea, its proper oceanographic term, and its entire shores, and the shores of St. Kitts, border on the Antillean-Caribbean Sea, rather than the Atlantic Ocean. The clarification of this misinformation is published in *Limits of Oceans and Seas* by the IHO (International Hydrographic Organization). The IHO is the world's authoritative body regarding the names and boundaries of all oceans and seas.

After their initial creation, the Lesser Antillean island land masses were colonized over millions of years with plants and animals, primarily of a South American origin. Those complex colonization processes are more fully illuminated in *The Theory of*

*Island Biogeography* by MacArthur & Wilson (1967). These were events of natural pre-human colonization by plants and animals and those plants and animals on Nevis co-evolved (natural interdependence – depending upon one another for their survival) in the course of more than 23 million years. Where appropriate, forests of enormous trees reached down to the shorelines of Nevis. This was still the case in 1493 AD when Columbus first saw Nevis. Even after Amerindians had been living on Nevis for many thousands of years there remained trees of such immense size that the Amerindians could make canoes made of the trunks of individual trees so large that each canoe, 'made of a single timber', could contain more than 150 persons (as cited by Columbus). How big around and long does a canoe have to be to seat c. 150 Amerindians and how big does the tree from which those canoes were made have to be? This is suggestive of how extensively wooded Nevis was right down to the shoreline; A shoreline that has subsequently contracted in size.

Circa 18,000 years before present, during the last period of global cooling and the time of maximum polar glaciation, a great deal of oceanic water was trapped as ice at the poles as well as in glaciers. As a consequence the sea levels in the Antillean-Caribbean Sea were as much as c. 122 meters (400 ft) lower than they are today; Any area of the Antillean-Caribbean Sea that is now c. 122 meters (400 ft) in depth was then above sea level as land. For example, the current islands of Statia, St. Kitts, and Nevis were all part of one very large island. As the world progressively re-warmed as part of Milankovich Cycles (the wobbling of the earth's rotation on its axis) sea levels began to rise as water was released from glacial entrapment.

As sea levels rose throughout the Holocene period (c. 14,000 years ago to present) and water covered those parts lower than today; the three islands of Statia, St. Kitts, and Nevis, became isolated as separate islands. The rise of the sea level continues to occur today from the melting of the earth's once frozen Polar Regions. As a consequence, Nevis is shrinking.

Nevis is part of an ongoing dynamic – a part of a larger scale process of natural change. But Nevis and the world has also been part of an ongoing unnatural series of processes caused by man known as anthropogenic change, and most of that manmade change also has been unnaturally destructive. For Nevis the most profound change came when humans began to inhabit the island. Beginning with the earliest pre-ceramic and pre-agricultural Amerindians and progressing to the more numerous ceramic making agricultural Amerindians, the introduction of alien plants and animals by humans, intentionally and accidentally, continued in earnest. These included such animals as dogs, hutia, mice, possibly agouti, and rice rats (oryzomyines - which were a culinary favorite of some Amerindians), and another cornucopia of plant species which included Cassava and Sweet Potatoes which were intentionally brought by the colonizing Amerindians as preferred staple plants for cultivation and semi-domestication. The seeds and pollens of unintentional colonizing (hitchhiking) plants also made the trip to Nevis. Both the aquatic and terrestrial landscapes of Nevis were then subject to human exploitation and by that exploitation a host of changes to both the physical terrestrial and the aquatic Nevis were also initiated in earnest. Humans ate their way through the former abundance of the reefs and shores of Nevis.

As human populations increased, particularly after the European discovery of a southern route to the Americas, the changes to the natural condition of Nevis began to accelerate. It is important to note that European Scandinavians had discovered a northern route to the Western Hemisphere well before Columbus and did so in circa the year 1000 AD. Both the European Scandinavians and Columbus were not the first

to discover the Western Hemisphere, the islands of the Caribbean, and the island of Nevis. There were Amerindians already here to greet them when they arrived. Subsequently, the changes wrought and directed by European migrants, at the hands of their indentured and enslaved persons, were almost immediate and profound and so profound that by 1687 a visiting and published Dr. Sloane of England stated of Nevis:

*'The ground was cleared almost to the top [of the c. 3232 ft (c. 985.7 m) Nevis Peak] ..., where yet remains some wood, and where are runaway Negros that harbour themselves in it'.*

This lovely island was swept almost clean by 1687, denuded for the growing of a few crops and then a mono-crop - sugarcane! Nevis was not alone – many, if not all, other Caribbean islands suffered the same fate. On the much larger island of Puerto Rico, by the beginning of the 1900's, greater than 90% of the once natural landscape was cleared and in some form of agriculture and remnant forest was limited to small patches.

Even without the denudation (the removal of all vegetation for other purposes) the increased number of humans living on and from the land had a profound impact on the once natural Nevis. At some point in the Colonial Period history of Nevis both food and wood had to be imported to Nevis. The need to import firewood and food, for slave and non-slave alike, on the highly fertile island of Nevis, should give some indication of how the land was profoundly altered for sugar production.

The land was not simply altered – the island was stripped almost completely bare of all of its natural vegetation for other crops of greater monetary value. The top soils, that took hundreds of thousands to millions of years to develop, were almost immediately washed away. So also began the ongoing process of the importation of a slew of additional alien plants to include: The Yam from Africa and Asia, the Mango from South Asia; the Breadfruit from South Asia; the Coconut Palm from the Indo-Pacific or NW South America; and the Norfolk Island Palm from Norfolk Island in the Pacific Ocean. These are just a very few examples. The process of alien animal importation also was accelerated to include cats, monkeys, donkeys, Old World rats, mice, camels, (yes camels), horses, cows, pigs (wild and domestic), mongooses, a number of bird species, and the more recent fire ant (an unintentional alien import). Each of these 'alien, non-native, exotic, non-indigenous, artificially introduced creatures' has their own complex of lifeways that cause habitat destruction (think Vervet monkeys) and inhabit the natural process of succession (a natural process where the land tries to return to a steady, balanced, fully evolved natural state).

A conclusion you should begin to draw is that the Nevis you see today (all plants, animals, forests, shorelines, and size) bears almost no resemblance to the Nevis of 3,000 years or even 500 years ago.

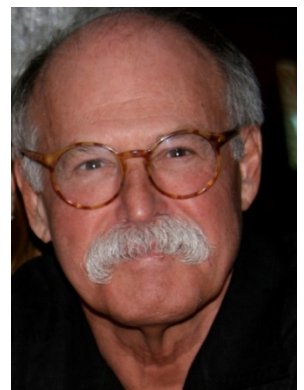
One native creature, of many, that has disappeared from Nevis since the earliest colonial period is the Lesser Antillean Green Iguana (*Iguana delicatissima*), a lizard that was circa 5 feet long and more than a foot around. Extensive land clearance, often by fire for sugarcane planting, and the introduction of the mongoose by humans, meant the end of these magnificent creatures on Nevis.

Using solely a single species of alien introduced animal as an example, there are an estimated c. 2,500 to c. 7,000 feral cats and house cats permitted outdoors on Nevis.

Based upon behavioral studies conducted elsewhere, those Nevis cats kill an estimated 250,000 to 11,200,000 living creatures every year on just Nevis. Within those ranges just mentioned, c. 900,000 to c. 2,555,000 of those creatures killed are birds! One can conclude that cats are one of many unnatural alien introduced animal species that do not naturally belong on Nevis and that inflict substantial environmental devastation.

In conclusion, Nevis in colonial times was stripped bare of its forests and natural vegetation over the entirety of the island to elevations in excess of 610 meters (2,000 ft). The topsoil was washed away and alien plants and animals were introduced. Nevis cannot recover to a natural state when aggravated by continuous land clearance and the impacts of free ranging grazing animals in very large numbers. Its remaining ruined state (there are small areas of exception) is exemplified by extensively over grazed thorny Acacia forests – Acacia and Cassia, almost the only things that will grow because free ranging grazing animals will not eat them. Throughout Nevis there are areas that appear relatively lush, but they are primarily composed of matrices of introduced and exotic plant species and are not part of a natural recovery. Think of the exotic introduced plants that may be in your yard - most do not naturally belong on Nevis and were originally imported from all over the world. A single example is the vibrant and beautiful Royal Poinciana, Flamboyant, or Flame Tree (*Delonix regia*), which was introduced to Nevis and the Caribbean by humans from the island of Madagascar in the Indian Ocean, off the southeast coast of Africa, a half a world away from Nevis!

Here is from whence we came and where we are – a consequence of our history as well as our current behaviors – This is the environmental base or ecological state of Nevis from which all else is based and emerges – including the birds of Nevis.



#### About the Author:

Mark Michael Ludlow resides part time on Nevis living on the hillside above Oualie Beach. A former Wall Street investment banker, he is currently a PhD student in Pre-Columbian Caribbean Ornitho-Archaeology at The University of Wales – Trinity St. David, Wales, United Kingdom. He awaits the defense of his completed PhD dissertation entitled: *On the Road of Birds & The Discovery of Grenada: Avian & Sight Assisted Early Human Migration in a Caribbean Islands Context: An Example in the Theory of Confluent Behavior (Pre-Columbian Caribbean Nesophilic Ornitho-Archaeology)*. He holds numerous advanced degrees and graduate certificates in Anthropology, Archaeology, and Natural History Field Studies and is a founder of The Nevis Ornithological Society. Their website – [www.birdsofnevis.com](http://www.birdsofnevis.com) – has circa a dozen articles about the newly documented birds of Nevis. The author may be contacted at: [MMLBird@aol.com](mailto:MMLBird@aol.com).