

Andrew Greller, Ph.D. (Email: agreller2@optonline.net), Professor Emeritus in the Department of Biology, Queens College, CUNY, Flushing, New York 11367

Lecture Topics by Series (These are Power Point lectures and require an LCD projector)

I. Lectures on **Caribbean Natural History** (presented on four occasions on the Royal Caribbean International Cruise Ship, Explorer of the Seas)

A. Caribbean Shore, Beach and Dune Vegetation. We will be "strolling" the rocky shores, beaches and dunes of a number of Antillean islands for plant life, sea birds and geological formations.

B. Natural History of Caribbean Mountain Rainforests, with special attention to El Yunque National Forest, Puerto Rico.

In the mountain rainforest of El Yunque we can see waterfalls, graceful palm trees, tree ferns, colorful orchid and bromeliad epiphytes, woody vines and tall evergreen trees. Birds, reptiles and amphibians, and other animals are abundant. We will explore the variety of animal life with colorful photos.

C. Mangrove Forests and Coral Reefs, the Nurseries of the Seas.

We will identify the 'big four mangrove tree species, discuss the ecology of mangroves and their importance to life along the coast. Here are the breeding ground of the great game fishes, green sea turtles, as well as magnificent shore birds and a great variety of other marine life. Mangrove forests form a lacework of water paths in bays and at the mouth of rivers. We will also review the ecology and biology of coral reefs, where the animals that form the reefs resemble colorful plants.

D. Dry Forests and Woodlands of Puerto Rico and Haiti and nearby islands. Some of the most beautiful flowering plants of the Caribbean region are found in the drought-deciduous lowland forests and woodlands. With colorful Power Point images we will see some of the variety of nature, including frogs and lizards and interesting plant forms. Butterflies and bird life are especially beautiful here

E. Fruits, Vegetables and other Useful Plants of the Caribbean Basin.

Let's explore the variety of fresh fruits and vegetables that are grown in the Caribbean Basin, with special attention to the native plants that Columbus brought back to Europe. Among those plants are papaya, pineapple, sweetsop, soursop, tobacco, chocolate and vanilla. Other plants are prized for construction, shelters, and medicine. We will review a wide range of Caribbean crops and natural products and show some important plant families that everyone who visits the tropics should know.

II. Lectures on the **Natural History of Central- and Northern South America.**

A. The "Jungle" of Northern South America. An unbroken expanse of rainforest extends from the northeastern coast of South America to the Amazon River. Here are a great variety of trees, shrubs, woody vines, giant herbs and epiphytic orchids, bromeliads and ferns. Join me on a pictorial journey into the heart of the pristine rainforest of northern South America. Hike to the bare-rock "Inselbergs," where striking Cock-of-the-Rock birds hold unusual courtship rituals, and where pineapples and orchids grow out of the cracks.

B Gallery Rainforest of Costa Rica. This is an illustrated "walk" through the magnificent and incredibly complex rainforest on the Caribbean coast of Costa Rica. Here are colorful miniature frogs, poisonous and constricting snakes, giant trees festooned with woody vines, a wonderful variety of tropical birds and mammals.

C. Natural History, Ethnobotany and the Mayan Ruins of Belize and Guatemala. Evergreen forests of diverse tropical trees cover most of the Maya Mountains of Belize. These forests are rich in useful plants, brought into cultivation by the ancient Mayans. Modern descendants of those Mayans still grow many of the plants. They live in harmony with nature and leave a very light footprint on the landscape. Learn about the foods they eat and the herbs they use for Mayan medicine. Walk up the magnificent Mayan temples and stroll the ball courts where the losing team was sacrificed to appease angry gods.

D. Mountain Rainforests of Costa Rica. Costa Rica and adjacent Panama have the highest peaks in Central America. Giant oak forests festooned with orchids and bromeliads clothe the upper slopes. Here are monkeys, jaguars, pumas, deer and other wildlife. Mountaintops have a low, dense vegetation that features beautiful flowering shrubs and herbs of genera we have in our local flora.

E. Galapagos Islands, the Cradle of Darwin's Theory of Evolution. These now-famous islands were visited by Darwin, who spent most of his time and energy collecting plants there and observing the near-miraculous tameness of the animal life. We will "visit" these islands, walk between basking sea lions, see lumbering land tortoises, scampering land iguanas, and observe the variations in birds of the same genus on the different islands. There is no better indicator of evolution than the variation of giant cacti from island to island, and the diverse forms of tree "daisies."

III. Natural History of South America, especially Argentina and Chile, with special attention to Cape Horn and the Temperate Rain Forests of Patagonia.

A. On the Trail of Charles Darwin in Chilean Patagonia: Temperate Evergreen Rainforests. Charles Darwin came to South America from the Galapagos Islands, arriving in Lima, Peru, then travelling down the western coast of South America to Chile and around Cape Horn. He observed autumn coloration among the Southern Beeches (*Nothofagus*) which provided a striking contrast to the evergreen podocarps and another *Nothofagus* species. Darwin saw "... large trees... [and] measured a Winter's Bark (*Drimys winteri*)... four feet six inches in girth, and several of the beech (*Nothofagus pumilio*) were as much as thirteen feet... Captain King also mentions a beech which was seven feet in diameter, seventeen feet above the roots. ...Above the forest land, there are many dwarf alpine plants, which all spring from the mass of peat..." Darwin compared the warmth of Tierra del Fuego, at 53° 38S, to Dublin, Ireland, at 53° 21 N.

B. On the Trail of Charles Darwin in Argentine Patagonia and the Antarctic Islands: Pampas, Patagonian Steppe, Monte, Sub-Antarctic Tussock Grassland and Giant Herbs and Sea Life of the Argentine Coast and Sub-Antarctic Islands. Grasslands of diverse composition varying with soils and climate characterize the eastern portion of the

cone of South America. It is dry and there is always a cool wind blowing from the South Atlantic Ocean. We will start in the famed Pampas of Argentina, seeing the great variety of rodents, the local fox, wild cat, deer and the condor. Then we travel southward through the Patagonian Steppe, where guanacos roam in large herds followed by the puma; then hop over to the Falkland Islands to see the giant Tussock Grassland and the large Pincushion plants. Here are a variety of birds, including flightless ducks and seabirds with great wingspans. Finally, we will see the giant herblands of the Sub-Antarctic islands, where single plants can grow 5 ft wide. It is a place where whalers and sealers captured great marine mammals such as whales, fur seals and elephant seals for oil, ivory and fur.

IV. Southern Hemisphere Islands and their Biological Connection to Ancient Antarctica.

A. Natural History of New Zealand: Kauri trees and podocarps, pandans, and the ancient, rootless *Tmesipteris* plant of the North Island, Temperate Rainforests, Glaciers and spectacular Fjords of the South Island.

B. Ancient Flowering Plants and Wonderful Life Forms in the Flora of Fiji. Fiji is a land that contains plants that were widespread in the Cretaceous Period, the Age of Dinosaurs. We will "stroll" through forests containing relicts of that ancient flora, such as cycads and araucarian conifers, as well as to see giant climbing ancestors of our modern grasses, giant ginger, plus ferns, orchids and a variety of unusual palms.

C. Bizarre Conifers and Unusual Plant Life Forms of New Caledonia. New Caledonia, especially its capitol of Noumea, was the center of naval transshipments to the South Pacific theatre of war in the 1940's. It has reverted to French control, with many positive and negative consequences for the plant life. Join me on a field trip around the Island, led by a prominent French botanist and attended by a stellar group of international scientists as we discover the bizarre vegetation and life-forms on Serpentine rocks that gives a unique character to the island. Over 20 species of the ancient conifer, *Araucaria*, occur there, along with strange ferns and even stranger life-forms of flowering-plant families we know from our local flora. See the long-term consequences of mining for nickel in this ancient land.

D. Leapin' Lemurs: The Natural History of Madagascar. Words can scarcely convey the strangeness of the island of Madagascar, a piece of Africa that has been adrift in the Indian Ocean since the Late Cretaceous. Ancestors of modern monkeys came to the island and evolved into the present day lemurs. Some were the size of great apes; others are no bigger than mice. All are beautiful and some adapt well to interaction with humans. There are beautiful endemic birds in families found nowhere else. Chameleons and insects are varied and colorful. Plant life is equally diverse, with families of desert plants (Thorn Forest) that occur nowhere else and have forms that can only be compared with some plants of Baja California.

E. Australian Vegetation: The East Coast and Outback

F. Vegetation and Wild Life in the Republic of South Africa. We were fortunate enough to have the services of a great birding guide whose father and grandfather were game wardens of Kruger National Park. We will see a range of unusual habitats, including the gorgeous wildflowers of the Cape and Karoo, as well as the great game animals of East Africa, especially along the St. Lucia River and estuary.

V. Natural History and Vegetation of Northeastern North America, with special emphasis on the New York Metropolitan Area, including Long Island.

A. Forests and Coastal Vegetation of the New York City Metropolitan Area.

Highlights of the diverse and beautiful flora and vegetation of the NYC metropolitan area, including a survey of the native mammals and an introduction to the original Algonquin inhabitants. We take special note of the beautiful autumn colors in the Long Island forests.

B. Autumn in New England and the Canadian Maritime Provinces. Toursits come from all over the world to see the magnificent autumn color of the New England mountains. We will see images of the many trees, shrubs and vines in full autumn color: maples (red), ashes (yellow, purple), beech, birches and poplars (yellow) and the red oak - all against the somber greens of spruces, firs and pines. Asters and goldenrods provide blues, whites and yellows to the fields and the forest floor. It is "the greatest show on earth."

C. Forests, Fields and Bird Life of the North Shore of Long Island. Climate, geology, soils and microclimate all contribute to the tremendous diversity of plant and animal life on the forested North Shore of Long Island. We review geological and cultural history and then look at the diversity of trees, shrubs and wildflowers and the birds that they shelter.

D. Newfoundland Wildflowers in Conifer Forest and Coastal Tundra. For the celebration of the 20th anniversary of its founding, members of the Long Island Botanical Society spent nearly two weeks in the Northern Peninsula of Newfoundland, where beautiful orchids abound and the ancient mountains are covered with conifer forests, while the lowlands have bogs and fens with insectivorous plants and a great variety of heaths. Windy shores are swept clear of forests and shrubs and provide habitat for Arctic plants that one would expect to see only much further north.

E. Biodiversity in the Suburban Garden of Western Long Island. In the suburban neighborhoods of western Long Island, savvy gardeners plant a great variety of trees, shrubs, vines and flowers - both wild and exotic - to rival the natural forests and fields of Long Island. Let's walk a neighborhood to see what the residents have planted to bring beauty and diversity to all of us strollers.

F. Pine Barrens and Natural Grasslands of Long Island. A show of beautiful kodachrome slides to survey the extensive areas of Long Island and New Jersey that have gravel and sand as their natural substrate, or have blocked drainage that does not permit tall forests of oak, hickory, maple and tuliptree to flourish there. Many rare and unusual plants grow here and nowhere else in the NYC metropolitan area. Dwarfed oaks and heath

shrubs turn glorious shades of red in the autumn and shine against the dark green of the pitch pines that dominate these pine barrens.

VI. Natural History and Vegetation of Europe. These talks take in a few of the countries of southern and eastern Europe, whose folk traditions are colorful and whose histories are fascinating. We take particular note of the natural vegetation and the abundant bird and animal life. Evergreen oaks and pines are the predominant vegetation of the coastlines of the Mediterranean Sea and we will visit those coasts in Spain Italy, Greece and Turkey.

A. Mediterranean Crops

B. Vegetation of the Balkan Peninsula

C. Vegetation of Estonia

D. Natural History of Romania, with birds of the Danube Delta

E. The Dolomites of Italy and its Significance to WWI and After

F. Vegetation Along the Coasts of the Mediterranean Sea

VII. Vegetation and Natural History of the Far East of Asia

A. Forests of Japan. Travel with me from the south to north observing the change in forest cover and flora, visiting cities large and small and touring sites of religious and historical interest. We will see semi-tropical vegetation, temperate evergreen forests and deciduous forests; also we visit ancient shrines, hike the mountains paths with Japanese trekkers and end in Sapporo with a fine seafood stew.

B. Vegetation of Taiwan

C. Birds of Taiwan, by Habitat (and some Butterflies)

VIII. Geology and Ecology of the Colorado Plateau, U.S.A. This Power Point presentation takes you around the Grand Canyon and visits other great National Parks and Monuments in the West, that feature hundreds of millions of years of geological history. We also see the natural vegetation, beautiful wildflowers and the birds and mammals of the area.