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Nature, Natural History, and Naturalists in Virginia Since 1927: A Personal Evaluation[1]

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INTRODUCTION

Most primitive societies – unless surviving on the very cusp of starvation – normally continued to support those members too old to hunt, fight, gather, harvest or bear children to serve as custodians of tribal tradition and regulations, passing unwritten knowledge through generations like members of a relay team. In effect, they were the first historians. Only in that context can I justify the presumption of exposing you tonight to a highly subjective, and often very biased, recitation of some of the events and trends affecting the general subject of natural history in Virginia from a fairly brief, and relatively recent, period in the history of this Commonwealth as seen by one who was there when it happened, and yes, often even *before* most of it happened. I wish to touch on three aspects of the subject which can be treated separately even though they are difficult to define and broadly overlap.

I. "NATURE" AS ENVIRONMENT

This emotionally charged word has a panoply of meanings: all reflecting the different ways in which individuals, interest groups, or entire societies perceive their relationship to everything outside themselves. Many would argue to include the entire Universe as a part of Nature, others would be more comfortable to embrace only those objects or phenomena peculiar to the planet we inhabit, both causing and resulting from the processes in operation since the origin of the Earth. This would essentially be the *physical environment and the organisms which populate it*. One problem is whether to include Mankind as a part of Nature. Many current definitions distinguish between a "natural world" and another "unnatural world" represented by the impacts of *Homo sapiens*. My personal preference would exclude the influences generated by the Ultimate Invasive Species over the past several millennia, when we changed from being merely existing in primitive ecosystems to drastically affecting them. Pragmatically, I realize that a history of the natural environment in Virginia must take into account the mostly negative impacts that this single recent factor has imposed.

First the good news:

A look at the positive results of recent human response to environmental degradation during the past 80 years shows substantial improvement. It is easy to forget that basically ALL of the state and federal regulatory agencies such as EPA, DEQ, and DCR did not exist in 1940, nor did the federal Wilderness Act, Wild & Scenic Rivers Act, Environmental Impact requirements, and Endangered Species legislation.

Water quality: In my childhood (early 1930s and 1940s) many rivers in Virginia downstream of paper mills ran as black as ink, malodorous and totally abiotic. At the same time, small cities through the state had no pretense at sewage treatment, the final effluent of the system simply discharging directly into the nearest river. Under pressure by the EPA, sources of such pollution, as well as of mercury and kepone, cleaned up their act, and the affected streams have largely recovered much of their original quality, although many important faunal elements have never returned.

Forest cover: The US Forest Service has progressed from an adjunct of the timber industry to a practitioner of multipurpose management that in addition to providing for watershed protection, limited timber harvest, and outdoor recreation has set aside extensive wilderness areas and special use tracts that simply

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protect enclaves of reasonably pristine Nature "for future generations". With protection against fire and logging, even our decimated stands of red spruce are recovering, although against the future spectre of ever warmer climate.

Drowned streams: The last major impoundments of Virginia rivers (Philpott, Smith Mountain, Buggs Island, Claytor, Gathright, and Anna lakes) were completed during the 1950s, before anybody knew or cared what would be inundated in the process. Since then it has been discovered that the US Army Corps of Engineers and power companies are *not* omnipotent, and that the Corps can be defeated or managed. The Gathright project was strongly but unsuccessfully resisted by environmental groups, including the VDGIF, but since then I have seen proposed impoundments on the New, Smith, and Pamunkey rivers overruled with the aid of strong local opposition. Dams are even being removed, restoring free flow from source to mouth (e.g., the Rappahannock River).

Land protection: The Nature Conservancy in Virginia, an infant of about five staff members when I first knew it, has grown along with its parent organization to an agency of great influence and accomplishment in the acquisition and management of large, usually jeopardized tracts, with such notable successes as the Great Dismal Swamp, the Eastern Shore barrier islands, and both Clinch and Warm Springs mountains. On a smaller but equally impressive scale, the Virginia Department of Conservation and Recreation has developed in just 20 years a network of 59 Natural Area Preserves protecting areas of special interest. In addition to these state and federal initiatives, the private sector has, also within the past two decades, initiated a spectrum of vigorous land easement programs by which privately owned property is guaranteed exemption from future development. Local advocate groups, like Friends of Dragon Run or the Bull Run Mountains Conservancy, play an increasing role in protection initiatives. Although collectively including less than 10% of the state's land surface, these various conservation measures represent successful environmental efforts that would not have been imagined 40 or 50 years ago. In this context, then, the local biotas in scores of refuges can expect a measure of permanent security. Even Virginia's cave systems have come under this new umbrella.

The Down Side:

Although stringent regulations against chronic stream pollution are in place, we are still having occasional chemical or wastewater spills: failure of wastewater catch basins and overturned tanker trucks. While these are "accidents" they still have dreadful effects on aquatic life. I recall vividly the Carbo spills of 1967 and 1970 that sterilized many miles of the Clinch River, and another farther upstream in August 1998. Acidification of streams by mine drainage is still a problem affecting the Powell and Big Sandy drainage basins.

Since organisms are a major part of any environment, Virginia has seen its share of bad developments, under the category "invasive species". The gypsy moth in particular has had a serious impact on broadleaf forests, defoliating oaks across much of northern and western Virginia, repeated infestations causing tree death. Control measures have so far shown limited effectiveness although continued spread southward may be retarded by climatic and microbial factors. Although the hemlock adelgid appears to have decimated these trees in some parts of Virginia, other extensive stands have so far avoided, or resisted, infestation. The jury is still out on the case of balsam adelgids at Mount Rogers.

Despite intervention by a number of cooperating agencies, the loss of unionid mussels in Virginia seems to be chronic and ongoing. Of the approximately 60 species recorded for the Clinch River by Ortmann in 1918, only about 40 remain, a loss of one-third of the original fauna. The unionids of the entire Shenandoah River system in Virginia have apparently been, with one exception, extirpated during the past half-century. I have noted declines in both numbers and diversity in several Virginia streams since 1988. Despite successes in rescuing individual species like bison, whooping cranes, and California condors, I very much doubt that our original unionid fauna can ever be restored. Perhaps our best hope is that the rate of decline can be slowed or reversed for some species at least.

We can quantify losses in a few groups such as mussels, because relatively thorough baseline inventories were conducted over a century ago. For most terrestrial invertebrates and plants, it has been almost impossible even to categorize species as secure or endangered because no such bases for comparison with earlier conditions are available.

Impact of the timber industry: Massive loss of broadleaf forest in Virginia seems to be increasing exponentially as extensive areas are being clear-cut and replanted in loblolly pine. One can scarcely drive 30 minutes on a backroad in our Piedmont and Coastal Plain without seeing truckloads of trees enroute to the sawmill, or pass cleared sites of an acre or square mile in extent. Many sites of potential interest are being transformed into pine plantations before even initial inventories could be made. I particularly regret this impact on the region of Pruetts and Spears mountains in

western Buckingham County, which I had the opportunity to traverse only once, noting the strong relief and pristine streams that invited investigation, before the arrival of logging machinery.

Burgeoning human populations: There are really two major escalating threats to the integrity of nature in Virginia today, both of them start with "de-". Deforestation has just been mentioned. Its partner is "development", the imposition of mankind's will upon nature. The population of Virginia has increased from about 3 million in my childhood to over 7.7 million in only about 70 years. While many parts of the state have seen population stability or even declines, there is no doubt that massive urbanization is taking place in the so-called crescent between Washington, D.C. and Norfolk. As recently as 1946, one drove between Fairfax and Arlington on a mostly two-lane US Highway 29 through a mosaic of fields, woods, and small settlements. The suburbs of Washington now extend 50 miles west and south. Anyone remembering the former Princess Anne County as a rural, thinly-populated countryside (with Sandbridge a desolate strand remote from nearest habitation), is appalled to be confronted by the doleful, sprawling complex of subdivisions, malls, and six-lane highways called Virginia Beach City. This litany could be extensively prolonged to include the leap-frog expansion of most of our cities. First Landing State Park, boxed in by beachside condominiums, is the Virginia version of New York's Central Park.

I think these two factors represent the most serious negative impacts on "Nature" in Virginia, and human increases naturally fuel further demands on forests for both paper and building materials. As long as our national economy is predicated on expansive consumerism, I see little hope that any form of population decrease or even stability will occur. Perhaps only depletion of fossil fuel supplies will result in condensation of our urban areas, as their cheap availability has created their expansion.

II. "NATURAL HISTORY"

What IS natural history? There are many concepts of what this term entails, and none seem really definitive. One is reminded of the Southern congressman who asserted "I can't give a definition of pornography, but I know it when I see it." Some common elements include the ecology and behavior of organisms under natural conditions. In my view, one must include also systematics and distribution of the organisms. In the usual context, "history" does not embody the sense of previous time, but a kind of formal documentation of information relative to the living components of the environment, it is of necessity a study, the accumulation of knowledge. In this sense, an astonishing amount of progress has occurred in Virginia during the past eighty years, in fact, most of it in the past forty. As a case in point: when I was just starting to develop an interest in "nature", the best tool for the aspiring ornithologist was Frank M. Chapman's field guide, which required actual birds in the hand for keying on the basis of beak, claw, and plumage characters. The "Peterson" category of field guides in color for many groups of animals and plants were still far in the future.

In terms of actual organized entities for promotion of natural history, several that come to mind are the Virginia Society of Ornithology, the Virginia Native Plant Society, the Virginia Archeological Society, the Virginia Butterfly Society, the Virginia Herpetological Society, and most recently, and philosophically the most comprehensive, our own Virginia Natural History Society (VNHS). Some local governmental initiatives are the Non-game Program of the Department of Game and Inland Fisheries, the Division of Natural Heritage of the Department of Conservation and Recreation, and the Virginia Museum of Natural History, all three just two decades in age, all charged with increase and diffusion of knowledge about our native biota and its environment. All state parks, and the majority of municipalities have developed self-guiding natural trails and provide instruction to visitors. Eighty years ago, there were no state parks: I was already 9 years old before Douthat (and five others) was operational!

Resources: Aside from the numerous pocket-sized field guides and larger more opulent manuals that describe many groups of rocks, fossils, plants, and animals on a regional basis, a number of surveys dedicated to Virginia's situation have appeared during the past several decades. We now have excellent books on our freshwater fish, reptiles, and mammals. There is a popular field guide to local geology as seen from the highway system, and another on the geology of Shenandoah National Park. The intricate stratigraphy of the Coastal Plain Tertiary formations has been deciphered and described in detail. Many areas are explained in regional geological field trip manuals. An atlas of the distribution of our flowering plants and conifers has gone through three revised editions, and is the precursor of a comprehensive *Flora of Virginia* now nearing completion. The "Insects of Virginia" series has produced 15 fascicles since 1969. VDGIF sponsored an elegant volume on the state's endangered plants and animals in 1991. The biogeography of the Southern Appalachians (with heavy emphasis on Virginia) has been addressed in the proceedings volumes of five

symposia convened between 1969 and 1999, another such volume was dedicated to the Great Dismal Swamp. The Virginia representatives of many groups of both animals and plants have been surveyed in the 33 issues of *Banisteria* published so far, and many others in the pages of other scientific journals. In short, the past three decades have seen a virtual explosion of access to many facets of Virginian natural history.

Some more downsides:

Less encouraging developments of the same period include the de-emphasis or abolition of organismal biology in our state universities, and drastically decreased support of state agencies like this museum.

III. NATURALISTS

Virginia may have been the Mother of Presidents, but she has never conceived anything like a corresponding number of naturalists. Although the Virginia colony can fairly be called the cradle of natural history in Virginia, after an impressive initial period the nursery has been only marginally occupied. Despite the anomaly of a remarkable landscape with a commensurate biotic diversity, after the demise of Jefferson and waning of his patronage, Virginians fell into self-absorbed gazing at the navel of human history, perhaps an outcome of the Jamestown-Williamsburg-Yorktown mystique. Only in geology, under the impetus of economic factors, was there much local interest in the natural world for many decades. Much of the fitful advances in knowledge is due to the interest of scientists from other places. While every county has had its own historical society, and heavily documented book, there was no natural history society until 1993.

What is meant by "naturalist"? The term can be defined in several contexts, with the gray area being the point at which someone who enjoys getting out into the woods for a hike, or simply likes watching birds at their backyard feeder, qualifies as a real naturalist. Unquestionably, thousands, if not millions, of people intuitively realize the spiritual benefits to be gained in that way and the number is obviously increasing. Another level embraces those who actively support environmental protection measures through donations, memberships, or positive votes in political referenda. Both of these categories grade into those who purchase field guides and actively learn to identify birds and wildflowers, often participate in natural history rallies or other instructional events. Collectively, people at these several levels of involvement may be considered "consumers" in that they rely on the expertise of those who know enough to generate basic information about natural processes and systems. They comprise the base levels of a pyramid, the pinnacle of which includes individuals committed to the actual systematic nuts and bolts work of collecting, documenting, synthesizing, and publishing. Maybe such persons can be called "producers", resulting in a complete reversal of the numbers distribution in an ecological trophic pyramid.

The historical record shows that within the past half-century, popular interest in natural history has increased dramatically, along with the availability of learning resources at every level of interest and sophistication. Educational television, public school instruction, many kinds of adult involvement opportunities, the complete spectrum from nature trail brochures, field guides, advanced manuals, attest to this fairly recent phenomenon. It has been accommodated by governmental agencies that address the issues of biodiversity, environmental quality, and the protection of both.

Remarkably, all of the foregoing opportunity has not been paralleled by a noticeable increase in the number of "producers" as just defined. One of the goals of the VNHS has been to facilitate, even generate, greater involvement in the sense of committed research into the "nature" of Virginia, but even with the ongoing excellence of local research as embodied in *Banisteria*, membership in the society has declined over the years. In particular, recruitment at the younger ages has been disappointing.

But can any amount of external (exogenous) stimulation, opportunity, and encouragement change these statistics? One must recognize the extent to which the "producers" are basically hobbyists who are pursuing their interests in more or less scientific patterns, call it research if you like, that generate new knowledge. As with other dedicated (even addicted) hobbyists, the motivation seems to be endogenous, some kind of compulsive intellectual mutation, which will express itself under unforeseeable, even unlikely, parameters.

But in Virginia, the opportunities for translating purely sensual enjoyment of Nature into an intellectual gratification are endless. In this respect serious study transcends the mere collector's urge that is a part of human nature. One can only hope that the quantum increase of interest in, and concern for, the natural world we have seen occur in Virginia during the past eighty years represents a momentum that sets the stage for a new level of active public involvement and support, and the VNHS should provide by its example the leadership into the new age.