

Maryland, Efficiency, and Birds

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It struck me recently that, as Marylanders, we've been lucky. In spite of our compulsions to tame and tidy-up, especially the land we claim as our property, amazingly few species have been tidied into oblivion. Heath hens, Carolina parakeets, and passenger pigeons may no longer grace us, but given the magnitude and rapidity of changes heaped upon our landscape over the past 400 years, it's gratifying there hasn't been more.

This point crystallized for me while on a recent flight between Baltimore and Buffalo. It was a bright, cold day in early spring, the commuter plane's flight was low and there was plenty of time to watch the land pass beneath. Most of the flight traversed provinces of farmed Piedmont and plateau. Interrupting the pattern of farms and woodlots were the odd wooded ridgeline and a large stretch of rugged terrain in north-central Pennsylvania known as the Canyonlands.

Watching the miles passively scroll by, the disjunct between mountain land and all else gradually began to register. The mountains, with their forests and streams, wound over the earth in patterns built on compound French curves. But beginning at the foot of the mountains the land abruptly shifted to angular forms. Everywhere were sharp edges. Fields, housing developments, roads, and the metes and bounds of property lines corralled the land into blocks. Within each, neatly displayed, were the products of human industry. Here were boxes for forest, corn, hay, villages, house lots, and parks. Grids of roads created efficient interbox movement. Every so often a river or stream disrupted the picture, the small defenseless waterways often tamed to ditches, but a few great rogues were left to riotously violate the constructed patterns.

Somewhere in this mix live the birds we love to watch. As conservationists our unsaid hope is that birds (and by extension all those smaller things we have never really learned to identify, but know are important) have prospered and benefited by our changes to the region's landform. In apparent confirmation, we find, through reports and observations of birders, that few species have dropped from the North American list since the last world war.

During this period, some species have colonized our region, house finches being perhaps the most prominent and notorious. But others have retreated. Bewick's wren, Bachman's sparrow, Red-cockaded Woodpecker, and Loggerhead Shrike grace us no longer but for the odd relictual individual. For other species we have strong suspicions that the abundance of populations and their relative rank may have changed over the years. While swings and fluctuations are part of natural and human-driven circumstances, there are some recent signs that our continuous drive for order may be squeezing some populations too far.

Following initial European contact several waves of change swept over the mid-Atlantic region. During Jamestown times woodlands predominated, but not the dense unbroken canopy most envision. Regular fires, largely set by Indians, grazing by elk and bison, and contiguous beaver populations kept the understory open and maintained many areas in grassy stages - suppressing forest regeneration. Large tracts of savannah and grassland occurred prominently along the coast,

kept open by the actions of permanent Indian settlements. Large openings also occurred throughout the Hagerstown Valley, and surrounding what is now Baltimore. These regions held prairie species such as bison, heath hens, and an extensive prairie flora.

With settlement came European systems of agriculture, the mix of forests and openings transformed to annually farmed fields surrounding sets of permanent dwellings. By the turn of the century forest cover had reached low ebb. Furthermore, the few remaining forest remnants supplied the villages, farms, and industrial Baltimore with wood for buildings, fencing, fire places, charcoal for forges and foundries, bark for tanning, plus mast and spring grazing for cattle and hogs.

The turn of the century society drew heavily on the productivity of the region's soil, water, and forests. Lack of most chemical fertilizers and pesticides kept yield per acre low while upkeep for animals kept for transportation (in addition to those kept for food) meant large state acreage developed for grazing, grain, and winter hay. Forests were kept closely cropped to supply local and regional energy and building needs.

In this environment open country birds thrived. Grassland birds adapted to hayfields and bobolinks, upland sandpipers, dickcissels, and even, in the western part of Maryland, lark sparrows were common.

Industrialization and fossil fuels triggered the next great round of changes to agrarian Maryland. Iron works were no longer fueled by charcoal; coal replaced firewood; Chrome sulphate supplanted the tannic acid derived from hemlock and oak bark, barbed-wire, manufactured from new inexpensive steel replaced thousands of miles of wooden fences, and creosote extended railroad tie life from 3-4 years to decades. Forests began recovering. Tractors began to replace horses and mules (an estimated 74,000 of which were still used in the state during the late 40's), decreasing the need for pasture and hay (hay acreage is now half what it was at the end of WWII).

Indirectly, railroads had perhaps the greatest impact. Railroads distributed inexpensive grain from the rich, flat prairies. The resulting price drops in Maryland regional grain markets, increased labor costs, the Depression, and the attraction of industrial jobs to laborers and farmers were sufficient cause for the abandonment of farms on marginal soils or with small acreage. Turn of the century farm population dropped from 300,000 to the present 84,000, total acreage in farms declined from 5,000,000 to 2,200,000, and number of farms from 50,000 to 14,500.

These demographic and technological changes washed Maryland in acres of uncut fields and young woods. Bird populations reacted and populations of white-eyed vireos, chats, golden-winged warblers among others attracted to scrubby areas increased.

The legacy of these social changes still shapes the trajectories of bird populations. On land abandoned during the first half of the century now perch mature woodlands, canopies finally closing out the grasses and shrubs that first grew. Birds that favored these transitional phases now are in steep decline. In the past 30-years yellow-breasted chat populations have slid an

estimated 45%, thrashers by 66%, prairie warblers 67%, and the quintessential bird of abandoned lands, the field sparrow, a whopping 72%.

Birds that most favor forests, as expected, have reacted favorably to recent changes. Woodland inhabitants like Carolina chickadees, red-bellied woodpeckers, acadian flycatchers, and parula warblers are up as are big tree specialists like the pileated woodpecker and the barred owl. This pattern is especially strong for those species that remain as year-round residents or shift to the southern states in the winter.

The story is different for those birds that winter in the tropics. These species are saddled with woodland changes on their wintering grounds not confronted by our less traveled regional residents. Trend patterns in veeries and wood thrushes are prime examples. Biological siblings, both are woodland breeders and winterers, but retain different tastes for wintering locales. Veeries winter within the relatively undisturbed forests of the Amazonian basin, along the backside of the Andes. In contrast, wood thrushes winter in Central American lowland forests, forests now largely cleared for settlements. Based on their breeding preferences both should benefit from increased northern forest cover, but while the veery has increased an estimated 292% in the past 30 years the wood thrush has declined by 43%.

Though Maryland as a whole has become partially rewooded, and in all likelihood parts will regain some semblance of old growth forest, recent demographic trends in human populations are diminishing some of those gains. Since the 60's, urban land area has trebled in Maryland. In the counties surrounding Baltimore and Washington D.C. there has been a 30% decline in forested area. Unlike the shift from agriculture to forest, the number of species that have benefited from this shift can be counted on 2 hands. State-wide abundance maps of birds based on point counts show distributional black holes around Washington and Baltimore for almost all birds. Interestingly, a few of the more versatile scrub nestings birds such as song sparrow, cardinal, and catbird have tempered their declines elsewhere by adapting to the artificial scrub of landscaped suburbs.

In lands remaining in agriculture, loss of species has been nearly complete. Grasshopper sparrows, meadowlarks, and bobolinks rank high in rates of decline. The same increases in farming technology that indirectly spawned many of the forest we have today, now preclude successful nesting on most of the remaining agricultural acres. Corn yields are a well documented example of the general pattern. Prior to 1900 the yield per acre was a steady 25 bushels, by WWII it had reached 41, currently it is over 100. Hay production, while less in the grip of geneticists, still doubled its yield per acre between WWII and now.

The result for grassland species has been precipitous decline. These species prefer older, less-maintained hayfields. The best fields contain a mix of grasses, wildflowers, and weeds producing not only winter animal fodder but a variety of surplus of seeds and insects for birds to feed on. To County extension agents, these fields embody the poor management practices of the past. Proper hayfields today are plowed and replanted regularly in productive, cool season grasses and legumes that, when pumped with fertilizers, yield uniform high-quality fodder but form impenetrable turfs with little to eat.

Cutting patterns have also changed. Traditional haying occurred once in June or July, depending on the region. Grassland birds either had already pulled a brood off or renested successful afterwards. Today the recommendation is to cut 2 or 3 times to maximize yields, making the fledging of young impossible. The current distribution of Upland Sandpiper is testimony to these changes. Only on the Amish hayfields of western Maryland, maintained using traditional horse-powered implements, does this species still breed.

Our affluence and numbers now require us to actively participate in the husbandry of our wild birds and other, less visible, biota. Recent land use trends direct us now not toward the conservation of forests, but to the conservation of grasslands and scrub. Our cultural habits now encourages permanent land forms. This place is a wetland, this place has big trees, here is where we live, work , and play; and these places grow our food. Lost is the disturbance, mix, and soft edges of land shifting from open-country to forest and back. Gone are the forest fires, shifting agriculture, and the pre-historic grazing communities that kept woody plants, in places, contained. To participate in the conservation of birds is to participate in the conservation of land. The decisions we make as individuals and a society on the extent and shape of our land define the bird communities we receive in return.

The table below contains population trend estimates for many of the birds in Maryland. Numbers for species in upper case come from the Christmas Bird Count (1959-1988)(CBC), lower case from Breeding Bird Survey data (1966-1994)(BBS). Values are given as the percentage change per year so that trends from CBC and BBS data can be compared. Trends for the entire time period can be calculated using the formula for compound interest (Aside: the analogy of birds as capital is really not far from the truth). If an asterisk appears in front of a bird's name, this indicates that we are greater than 90% confident that a negative (or positive) trend is truly occurring and not a figment of our inability to count birds.

For those of you who thirst for similar data for Virginia, or any state or province in North America, such data are readily available. The best Internet access for Bird Monitoring data is [here](#).

These data analyses presented here were made available through the benevolence of USGS biostatistician, John Sauer, who quietly makes coherent thousands of observations by birders throughout the world.

BBS Trends are presented in change per year and are listed in smaller case letters. CBC trends are also in change per year and in all capitals.

Species Trend

*Acadian flycatcher	1.1
AM. GREEN-WINGED TEAL	0.6

AMERICAN BITTERN	-0.8
*AMERICAN BLACK DUCK	-4.2
AMERICAN COOT	-3.2
*American crow	2.3
AMERICAN CROW	-0.3
American goldfinch	-0.4
AMERICAN GOLDFINCH	-0.5
American kestrel	-0.2
AMERICAN KESTREL	0.5
American redstart	4.1
*American robin	1.5
AMERICAN ROBIN	0.5
*AMERICAN TREE SPARROW	-8.1
AMERICAN WIGEON	-2.9
AMERICAN WOODCOCK	0.0
BALD EAGLE	1.0
Baltimore oriole	-0.8
BALTIMORE ORIOLE	-0.2
Bank swallow	-1.4
Barn swallow	-0.9
*Barred owl	4.4
BARRED OWL	1.0
Belted kingfisher	-0.9
BELTED KINGFISHER	-0.3
*Black vulture	11.5
*BLACK VULTURE	4.3
*Black-&-white warbler	-4.9
*Black-billed cuckoo	6.6
*BLACK-CAPPED CHICKADEE	-1.5
*Blue grosbeak	2.9
*Blue jay	-1.8
BLUE JAY	0.6
Blue-gray gnatcatcher	-1.6
Broad-winged hawk	-8.7
BROWN CREEPER	0.1
*Brown thrasher	-3.8
*BROWN THRASHER	-1.9
BROWN-HEADED COWBIRD	-3.9
*Brown-headed cowbird	1.3
*BUFFLEHEAD	3.2
*Canada goose	25.9
CANADA GOOSE	0.0
CANVASBACK	-0.8
*Carolina chickadee	-1.5
*CAROLINA CHICKADEE	1.8
*Carolina wren	3.1
*CAROLINA WREN	3.4
Cattle egret	4.1
*Cedar waxwing	11.6
*CEDAR WAXWING	9.7
Cerulean warbler	3.7
*Chimney swift	-1.5
*Chipping sparrow	-1.3
CHIPPING SPARROW	1.3
Chuck-will's-widow	4.6
COMMON BARN OWL	-0.4
COMMON GOLDENEYE	-0.3

Common grackle	-0.6
COMMON GRACKLE	0.2
*COMMON LOON	2.9
*COMMON MERGANSER	4.1
COMMON SNIPE	0.1
*Common yellowthroat	-2.6
COMMON YELLOWTHROAT	0.0
COOPER	
Downy woodpecker	-0.5
DOWNY WOODPECKER	0.3
*Eastern bluebird	6.4
*EASTERN BLUEBIRD	7.7
*Eastern kingbird	-1.8
*Eastern meadowlark	-4.9
*EASTERN MEADOWLARK	-5.4
Eastern phoebe	0.5
*EASTERN PHOEBE	1.5
*EASTERN SCREECH-OWL	2.6
Eastern wood-pewee	-1.0
European starling	-0.3
EUROPEAN STARLING	0.3
*EVENING GROSBEAK	-2.8
*Field sparrow	-4.5
FIELD SPARROW	-1.3
*Fish crow	5.0
*FISH CROW	13.1
*FOX SPARROW	-3.4
GADWALL	17.5
GOLDEN-CROWNED KINGLET	-0.7
*Grasshopper sparrow	-6.5
Gray catbird	-0.5
GRAY CATBIRD	-0.1
*GREAT BLACK-BACKED GULL	4.8
*Great blue heron	7.6
*Great horned owl	9.8
*GREAT HORNED OWL	2.3
GREATER SCAUP	3.7
Green heron	00.0
*GREEN-BACKED HERON	1.6
*Grt. crested flycatcher	-1.5
*Hairy woodpecker	2.4
HAIRY WOODPECKER	0.0
*HERMIT THRUSH	3.6
*HERRING GULL	4.2
*HOODED MERGANSER	2.0
Hooded warbler	1.6
*HORNED GREBE	-5.4
Horned lark	-1.3
HORNED LARK	-0.1
*House finch	25.6
*HOUSE FINCH	21.4
*House sparrow	-3.8
*HOUSE SPARROW	-3.6
House wren	0.3
HOUSE WREN	0.1
Indigo bunting	-0.8
Kentucky warbler	0.1

*Killdeer	3.1
KILLDEER	-1.0
*Laughing gull	9.8
*LAUGHING GULL	-1.6
*LESSER SCAUP	4.1
*LOGGERHEAD SHRIKE	-2.4
Louisiana waterthrush	1.9
*Mallard	12.9
*MALLARD	2.8
MARSH WREN	0.4
MERLIN	0.0
*Mourning dove	0.8
*MOURNING DOVE	3.2
*MUTE SWAN	10.7
MYRTLE WARBLER	-1.5
N. Rough-winged swallow	5.6
*Northern bobwhite	-3.8
*NORTHERN BOBWHITE	-3.8
Northern cardinal	-0.5
NORTHERN CARDINAL	-0.3
NORTHERN HARRIER	0.7
NORTHERN MOCKINGBIRD	0.0
Northern mockingbird	-0.4
*Northern parula	2.8
*NORTHERN PINTAIL	-10.1
NORTHERN SAW-WHET OWL	0.0
*NORTHERN SHOVELER	2.0
*OLDSQUAW	4.8
*Orchard oriole	4.8
*Osprey	8.3
Ovenbird	0.2
PALM WARBLER	1.0
*PIED-BILLED GREBE	-1.4
*Pileated woodpecker	5.0
*PILEATED WOODPECKER	1.6
PINE SISKIN	-1.7
Pine warbler	1.1
*PINE WARBLER	1.9
*Prairie warbler	-3.9
Prothonotary warbler	-2.5
*PURPLE FINCH	1.6
*Purple martin	2.9
*RED CROSSBILL	-2.3
*RED-BELLIED WOODPECKER	1.6
*Red-bellied woodpecker	1.0
*RED-BREASTED MERGANSER	-1.9
*RED-BREASTED NUTHATCH	1.6
Red-eyed vireo	-0.3
RED-HEADED WOODPECKER	0.6
*Red-headed woodpecker	8.8
*Red-shouldered hawk	4.5
RED-SHOULDERED HAWK	1.1
*Red-tailed hawk	6.8
*RED-TAILED HAWK	3.0
RED-WINGED BLACKBIRD	4.5
Red-winged blackbird	-0.5
*REDHEAD	-11.7

*RING-BILLED GULL	8.7
RING-NECKED DUCK	0.3
RING-NECKED PHEASANT	-0.1
*Ring-necked pheasant	-3.9
Rock dove	-0.1
ROUGH-LEGGED HAWK	-0.1
*RUBY-CROWNED KINGLET	1.1
Ruby-thr. hummingbird	-0.2
RUDDY DUCK	-1.3
*Rufous-sided towhee	-4.6
*RUFIOUS-SIDED TOWHEE	-3.0
*RUSTY BLACKBIRD	-2.0
SAVANNAH SPARROW	-3.3
*Scarlet tanager	-1.3
*SHARP-SHINNED HAWK	2.7
SHORT-EARED OWL	-0.2
SLATE-COLORED JUNCO	-0.7
SNOW BUNTING	-0.7
SNOW GOOSE	12.4
Song sparrow	0.0
SONG SPARROW	-0.7
Summer tanager	0.2
SURF SCOTER	2.1
SWAMP SPARROW	-1.7
*Tree swallow	8.0
*Tufted titmouse	1.1
TUFTED TITMOUSE	0.2
TUNDRA SWAN	-2.1
*Turkey vulture	5.4
TURKEY VULTURE	0.5
Veery	5.0
*Vesper sparrow	-8.8
*VESPER SPARROW	-1.6
VIRGINIA RAIL	-1.5
Warbling vireo	-2.0
WATER PIPIT	0.1
Whip-poor-will	-1.6
WHITE-BREASTED NUTHATCH	-0.5
*White-breasted nuthatch	6.2
WHITE-CROWNED SPARROW	1.0
White-eyed vireo	-0.7
WHITE-THROATED SPARROW	0.8
WHITE-WINGED SCOTER	1.4
*WINTER WREN	-0.9
*Wood duck	5.9
WOOD DUCK	0.6
*Wood thrush	-2.0
Worm-eating warbler	0.7
Yellow warbler	0.9
*YELLOW-BELL. SAPSUCKER	1.6
Yellow-billed cuckoo	-0.4
*Yellow-breasted chat	-2.1
*Yellow-shafted flicker	-1.2
*YELLOW-SHAFTED FLICKER	2.0
*Yellow-throated vireo	-2.6
Yellow-throated warbler	00.0
