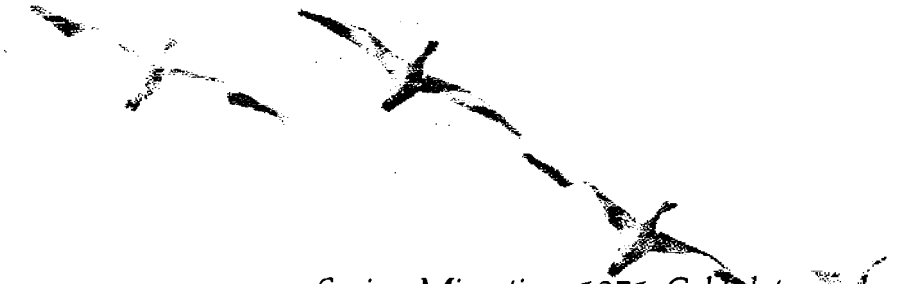
THE CHANGING SEASONS

*by Robert O. Paxton**



Spring Migration, 1971. Cold, late, and protracted over much of the continent, with birds lingering south and substantial movement well into June.

Snow Geese in flight. Photo by Adrian Dignan

Spring 1971 was a rough, cold, windy, late season in virtually all parts of the country. Through all of April and most of May, one cold front after another swept across the United States and Canada, west to east. The effects of these cold northwest winds and frontal turbulence show up dramatically in the regional reports that follow.

Start with the far western reports, for example. Thousands of Red Phalaropes, which usually migrate well out to sea, were buffeted ashore along the whole length of California by northwest gales reaching a peak of 100 mph at Point Reyes on May 21. Four reached Nevada at Las Vegas (Southwestern Region) for a first state record. At Mammot, Calif., just east of the Sierra front (Great Basin–Central Rocky Mountain Region), where I remember camping agreeably one late May, Vaux' Swifts were found frozen after a late snowstorm on May 28. At Hays, Kan. (Southern Great Plains Region), a brooding Pine Siskin and her eggs were crushed by a hailstone. There were tornados and "hail the size of softballs" in Illinois on May 7, and the following day dead blackbirds littered the grassy fields of the Williamson County Airport (Middlewestern Prairie Region).

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The cold fronts pushed much further south than normal, grounding masses of migrants along the Gulf Coast and causing unprecedented tower kills in Florida. Nearly 2200 birds of 42 species crashed into the lunar vehicle assembly building at Cape Canaveral between April 21 and May 2. It snowed on Virginia's Peaks of Otter on May 3. Exhausted migrants were reported coming aboard boats following cold fronts in late May off Florida, New Jersey, and Massachusetts. It was a season when the topic of weather was unavoidable.

A LATE SEASON

The regional editors were nearly unanimous: it was a late season. But that easy generalization covers a host of ambiguities. For instance, there are the normal reports of early arrival dates sprinkled through these pages. Among many examples, there are early warblers in New England and the Hudson Valley, and the earliest Wood Thrush since 1946 on April 1 at Columbus, Ga. (South Atlantic Coastal Region). Moreover, the number of southern birds "overshooting" their usual breeding range was, if anything, greater this spring than last. We must look more closely at what a late spring migration means.

Migrants leave the tropics in spring at an apparently quite steady daily rate, for rea-

sons that have more to do with physiology than weather. It is to be expected that some of these get to their destinations early, regardless of weather farther north.

Early arrivals, regardless of weather, are all-the-more-likely because the bird population unfolds northward in spring in reverse order. As a rule the more southerly breeders arrive on station before the more northerly breeders pass through. The Middle Pacific Coast Region adds some interesting data on this from the Point Reyes Bird Observatory, where the banded, locally-breeding Orange-crowned Warblers arrive before the bulk of migrating Orange-crowned Warblers passes through. In this way, banding is supplementing what was already known from subspecific differences, as with the southern coastal Black-throated Green Warblers (*Dendroica virens waynei*) which arrive before the bulk of that species migrates through (Middle Atlantic Coastal Region).

The major effect of weather, then, is not upon first arrivals but upon departures of wintering birds and of redepartures of northerly-breeding migrants. There is a cumulative slowdown northward when, as happened this year, vegetation and insect development are delayed, making survival harder for the first arrivals. This season's regional reports are filled with comments on late vegetation, record late dates for lingering, wintering waterfowl, hawks, Brown Creepers and the like (there had been almost no "winter" finches to remain late). Also, the spring migration was clearly still in full swing in early June when the local contributors had to send their reports in to the regional editors. Even in southern California, the biggest day at an interior oasis was May 31. The Manomet Bird Observatory in Mass. for example, was still going full tilt in mid-June. One wonders what effect this will have on the nesting season.

The major point, perhaps, is that individual arrival dates, which once were so religiously recorded, are too random to mean very much. One swallow doesn't make a spring either. What counts is the moment of peak migration for each species and the ways each species finds its path. For that, we have to see the migration as a whole.

SPRING MIGRATION AND THE OBSERVER ON THE GROUND

The problem is that most of us see spring migration only at one remove. Migrants are aloft at night; we are abroad by day. What we see then is the fall-out; the residue; the morning after. That may bear very little resemblance to what went on overhead the previous night. A very poor day on the ground may follow a massive fly-over. Conversely, a memorable day on the ground may reflect a migration catastrophe. It is often bad weather that forces migrants down to form the "waves" birdwatchers rejoice in. When Allen Cruickshank in Florida calls this "the best spring flight in 19 years," he means best for the birdwatchers. Herb Kale speculates in the Florida report on the "horrendous" mortality at sea this spring, judging from the exhausted migrants coming aboard boats at sea after cold fronts.

There are ways to see spring migration directly, of course, instead of its ground reflection. They take effort, ingenuity, and fancy equipment. In a recent *Auk* (88:2, April 1971), Frank Bellrose describes fitting a light plane with floodlights, crisscrossing the Middle West at night, and counting the little black shapes that flash across the beam. He learned a great deal about the height of flying migrants, their variation with changes in terrain, how few are still flying after a cold front passes, and how many are moving north in spring with a warm front. You can also attach a tiny radio transmitter to a spring migrant and follow its signals in a plane, as was done with a Hermit Thrush across Lake Michigan several years ago.

The most important information nowadays comes from radar. Ever since it was proven that those unexpected echoes which World War II radarmen called "angels" were really birds, radar has brought us closer to perceiving the whole migration directly than any other means. In migration studies, there is the "before radar" era of guesswork and the "after radar" era of concrete information. William H. Drury, I. C. T. Nisbet, and others have made New England the best-known region in this respect. More recently, Sidney Gauthreaux, a sometime [and next time—Ed.] writer in this space, has compared radar results with direct observation on the Gulf coast of Louisiana ("A Radar and Direct Visual Study of Passerine Spring Migration in Southern Louisiana," *Auk* 88:2, April 1971). And there is an article by W. J. Richardson in this issue of AMERICAN BIRDS (p. 684) giving specific and tangible data on migration in the Canadian Maritime Provinces.

The problem with radar, of course, is that you can't tell which species are migrating. Here the ground observer comes back into his own. Nowadays, with the knowledge of general patterns being gained from radar, we are better equipped to extrapolate back from the morning-after residue to what went on overhead the night before, and to fill in the main unknown: the species composition of the migration.

FRONTAL ACTIVITY IN SPRING

One of the main patterns concerns the impact of a cold front or a warm front, in spring as well as in fall. The regional reports this season show fronts effecting migration in several ways.

(1) "Precipitations" Many migrants drop to earth when they encounter a storm. This occurs in quite different ways in different regions. "Waves" occur on the Farallon Islands (Middle Pacific Coast Region), manned nowadays for long periods by intrepid banders from the Point Reyes Bird Conservatory, when the prevailing northwest winds turn south in a low pressure system. These southerly winds often bring rain or at least overcast. By contrast, it is cold fronts which cause "coastal precipitations" of really heroic proportions along the Gulf coast. Migrants arriving from across the Gulf (it is 480 miles from Yucatan) normally fly inland to the first forests before descending. If they encounter a cold front pushing north wind and frontal storms to the Gulf Coast, however, the birds literally rain into the first coastal vegetation they can find. The sight of spring migrants jostling for room in the coastal scrub must be one of the seven wonders. A Florida observer this season calls it "a glimpse of primeval garden." This spring, coastal precipitations were most spectacular in the Central Southern and Florida regions as cold fronts penetrated much further south than usual time after time.

(2) Warm Fronts The traditional midwestern and eastern "big day" in spring follows passage of a warm front, with its massive arrivals in warm southwesterly winds. An eastern birdwatcher planning a big day in spring hovers over the weather maps watching for an approaching warm front. This spring, however, there was not a single warm front in April. Even in May, the U.S. Department of Commerce's weekly weather maps show no really classic textbook major warm front. An abortive warm front up into the middle south on May 4-5 brought days described as "the best in years" to the South Atlantic Coast Region. Rather indistinct warm fronts passed off the New England coast on May 9 and 11, bringing "a fairly good wave" to the Northeastern Maritime Region and 115 Bobolinks to Prince Edward Point, Ont. The best warm fronts to follow through the regional reports this season, if you have access to weather maps, are those of May 16-18 (actually a small tropical storm that raced up the East Coast), and the more classic big warm front of May 24-26.

The Western New York Region had a peak on May 15-16, the Appalachian Region May 15-18, the Hudson–Saint Lawrence Region on May 17, and the Middle Atlantic Coastal Region's Island Beach, N.J., banding station had its peak day for the season on May 18. In Ontario, on May 19, there were 94 Eastern Kingbirds on Prince Edward Point. It all fits together very neatly. The late May warm front shows up best in the Hudson–Saint Lawrence Region, which had large numbers of migrants on May 23-24, and the Northeastern Maritime Region, where the Manomet Bird Observatory had its biggest days on May 25-27. A Black-cowled Oriole turned up on Seal I., Nova Scotia, on May 24.

We are left wondering whether these migrations within warm fronts represent response to some active stimulus in spring, or whether they are simply the absence of inhibiting factors. That will probably have to be answered by the physiologists. In the meantime, we can say that there were plenty of inhibiting factors this spring.

DIURNAL MIGRATION

The ordinary observer has one other chance to see spring migration directly, if he concentrates on birds that move by day. Everyone knows about Canada Geese, cranes, and hawks; many passerines also migrate day by day. Even the daytime movements of nocturnal migrants are often not random. The Europeans are ahead of us in this field. There are superb accounts of daytime movements of Chaffinches and Skylarks along the Dutch and Swedish coasts, for example, and of passage through Alpine and Pyrenean passes. A whole issue of the *Ibis* was devoted to diurnal migration some time ago (95:2, April 1953). Does Europe really have more diurnal migrant species than North America? Perhaps, but we are neglecting what we have.

This season's reports contain some rather

tantalizing hints about daytime migratory movements, of several distinct kinds.

(1) Concentration Points Peninsulas at water crossings, like Point Pelee, Ont., and Cape May, N.J., are well-known migrant concentrators in fall. This season, Prince Edward Point, in eastern Ontario, was systematically covered in spring, with interesting results. There are other less obvious but equally important concentration points in most regions, if one looks for them. Note how often Deep Springs, an oasis in an arid inland valley, shows up in the Southern Pacific Coast report. In the east, Ned Boyajian has spent hundreds of hours in recent years at an overlook where an important daytime migration crosses the Hudson River or follows its course (Hudson–Saint Lawrence Region). Consider his 5100 passerines in two hours on April 10, his 2712 Robins heading north into the wind on April 18, or his 1732 Blue Jays in two hours on April 24-25. That grew to 6200 Blue Jays on May 1-2. The Blue Jay is not only a major diurnal migrant, but a species enjoying a several-year population boom. Jim Eike counted 3200 at Clifton, Va., on April 30, and Jack Abbott saw 2000 passing over Fort Belvoir, Va., the next day (Middle Atlantic Coast Region), while banders at Pymatuning, Pa. (Appalachian Region) tagged 180 as compared to their average 30.

(2) Coastwise movements A sea-watch of loons, grebes and other major coastwise migrants by the Point Reyes Bird Observatory, of which only a few fragmentary observations appear this spring (Middle Pacific Coast Region), may be the only one of its kind. In view of the oil casualty statistics in that same report, it would be a good idea to build a statistical base now with similar migration counts on other coasts.

(3) Reverse Migration This is a predominantly spring phenomenon among diurnal movements, a response to hard weather encountered while moving north. The survival value of such retreats for early flycatchers about to run beyond the insect supply, for example, is obvious. The Middlewestern Prairie Region report has an account this season of 2100 birds of 11 species coming off Lake Michigan at Chicago on April 11.

TRENDS

Southern Waders The usual spring move north beyond the breeding areas was even more extensive than last year. Little Blue Herons reached California, Ontario, and New Hampshire. Louisiana Herons were more numerous than ever before in the northeast. Yellow-crowned Night Herons appeared in record numbers in the Middlewestern Prairie Region, with scattered records as far afield as Sioux Falls, S.D., and the San Francisco Bay area.

This is not necessarily a healthy sign. Some of this movement may be dispersal from grave drought conditions in Florida and the Southwest. That may explain the astonishing Limpkins in Virginia and Maryland. Robert P. Teulings suggests the same explanation for Scarlet and White Ibis and 1200 Wood Ibis in his region. There was a White Ibis, too, in the San Francisco Bay region.

The big event in this department was the unprecedented surge north of Glossy Ibis. Although this species has a history of wide wandering, there has been nothing like this spring's irruption, which builds upon the population increase of the past decade. This season there were 55 in Ontario, 5 in Nova Scotia, 2 on Prince Edward Island, 25 in New Brunswick, 217 in Massachusetts, and 510 pairs at South Point, Md. New nesting areas should be watched for this summer.

Shorebirds Since most observations of a bird as spectacular as the Hudsonian Godwit are probably reported, there are clear signs of continued major increases in this species. It is mentioned in perhaps a third of the regions, at times in astonishing numbers: 15 in Alaska, where it is a relative newcomer, 56 in Iowa on May 16 (Middlewestern Prairie), 60 near Cleveland, N.D. on May 15 (Northern Great Plains), 48 at Cove, Tex., on May 14, and 389+ in Chambers Co., Tex. on May 12 (South Texas Region)!

SUCCESSFUL ADAPTERS TO HUMAN HABITATS

Cattle Egret This exploding species is filling out its range rapidly now in the middlewestern and Great Plains regions, remaining fairly static for the moment on the east and west coasts. This season there were "several thousands" reported breeding in southeastern Missouri and 3000 at Palestine, Tex., and isolated records north to Utah (perhaps a first state record) and Sully's Hill, N.D.

Monk Parakeet This bird, now breeding in several East Coast suburban areas, promises to become the next major new introduced species in the Northeast. It establishes communal roosts or nest sites extraordinarily

quickly after first appearing in an area. See the Middle Atlantic and Hudson–Saint Lawrence Region reports.

Common Grackle This species is apparently expanding westward, with the third Alaska record this season. The Great Basin–Central Rocky Mountain Region has an interesting observation upon its success in replacing *Brewer's* Blackbird as the nesting Icterid of Denver.

ENDANGERED SPECIES

Brown Pelicans, now officially added to the U.S. Fish and Wildlife Service's endangered species list, are reported to be suffering their first thin-egg casualties at Florida nesting sites.

For the record, there are 48 reports of Peregrine Falcons this season. Everglade Kites had what I take to be the second year in a row without nesting success. Caracaras seem to be quietly vanishing from Florida. Readers will wish to study reports of eagle-shooting in the Great Basin–Central Rocky Mountain and Ontario regions, and the electrocution of eagles by power lines in the Southern Great Plains region.

Other Raptors Only the Red-Tailed Hawk, the White-tailed Kite, and the Mississippi Kite (see Florida, Southwestern, and Southern Great Plains Regions) seem to be doing well.

WESTERN BIRDS EAST

Some species in this familiar category are no longer really "western." Since the Clay-colored Sparrow is now extending its breeding range eastward in Ontario, it is perhaps not surprising to find an increasing number of spring records in the east, where this bird was formerly considered a mostly fall straggler. (See Middle Atlantic Coast, Hudson–Saint Lawrence, and Western New York Regions.) The same goes for Western Kingbirds, now nesting east to Illinois. There were more spring records in the east and southeast this season than usual for this species, mostly recorded heretofore in the east in fall.

EASTERN BIRDS WEST

Unless this writer has lost count, the Californians have now recorded all "North American" warblers except Swainson's, Colima, Olive-backed, Golden-cheeked, and Kirtland's. Keep trying! The most recent eastern species newly discovered to be regular in small numbers in California are Chimney Swift and Whip-poor-will.

SOUTHERN BIRDS NORTH

Surprisingly, for a season reported to be "late" and "cold," there were more of some southern species "overshooting" their known breeding ranges than last spring: notably Kentucky and Worm-eating Warblers, and Orchard Orioles. Northern records of Cerulean and Prothonotary Warblers also remained numerous. White-eyed Vireos are expanding in the Upper Middlewest and Northeast. To this list should perhaps be added the Vermilion Flycatchers that showed up in the Middlewestern Prairie, Northern Great Plains, and Great Basin–Central Rocky Mountain Regions.

RARITIES

Aside from being the spice of a good field day, accidentals really deserve attention as possible harbingers of population changes. The classic case is the Little Gull, once considered accidental now a localized breeder in Ontario. Forty-five were reported this season, mostly in Ontario but including an unprecedented 16 at South Amboy, N.J. Will this kind of establishment follow for European Widgeon (27 reports this spring) and Ruff (15 reports)? Following along behind were Common Teal (7), Tufted Duck (7), Black-headed Gull (5), Lesser Black-backed Gull (1 each in Florida and North Carolina), and a White-winged Black Tern in the Maritime Provinces.

In the category of genuine surprises this season were Ian Nisbet's Yellow-nosed Albatross in Buzzard's Bay, Mass. (apparently the fourth East Coast record), both Bar-tailed and Black-tailed Godwits on the East Coast (Hudson–Saint Lawrence, Middle Atlantic Coastal, and Florida regions), further confirmation of Cave Swallows in Nova Scotia (Northeastern Maritime Region), and an astonishing report of Black-cowled Oriole from the same place.

It is western Alaska where the ornithological frontier is still really open, however. This season there were a second Garganey (also one in Manitoba), Common Pochard, Wood Sandpiper, Common Sandpiper (3rd record), two more Bramblings, and Hawfinch, (2nd North American record). Most of these records came from Adak or the Pribilofs, with their strong admixture of Eurasian species.

[*Unfortunately the report from the Western Great Lakes Region was received too late to have its data included in this analysis.*]