

The Changing Seasons: Winter 2000–2001

Hawk owls, hummingbirds, and hardies

Writers faced with summarizing the continent's birds' and birders' activities in these pages—or “the luckless inheritors of this space” as Bill Robertson (1975) once called Changing Seasons columnists—sometimes invoke at the outset what Harold Bloom termed the “anxiety of influence,” that writerly fear that whatever is written will suffer poorly in comparison to the great volume of text that precedes and looms over it. David Muth (1999) was right when he wrote that after Kenn Kaufman's myriad analyses, careful critiques, and sallies into speculation, the Changing Seasons had become a column that challenges and permits its authors to do more than summarize the season: it allows digressions, even daring, and Muth's own aplomb refreshed the column instantly. Michael Patten (1998) had refined the column still more by transforming what had been largely a journalistic endeavor into a careful scientific forum, much as Kimberly Smith (1977) had done, complete with an extensive set of references to the current scientific literature. Readers wanting to know more about greenhouse warming, El Niño/Southern Oscillation, or the latest on bird migration could continue their thinking through these well-selected references. In turn, Tony Leukering's recent Changing Seasons (2001) combined all the best aspects of past columns: seasonal analysis, updates on the state of laboratory ornithology, and exhortations to caution and precision in our field work and record-keeping.

Readers of this column know that its greatest value lies in its continuous reflection on its own enterprise, in its accretion of thinking about birds' lives, and in the dialogue, explicit or otherwise, carried on here between regional editors and columnists, as well as the intertextual exchange between past and present Changing Seasons columnists. We writers in the present have the immense advantage of being able to read back on decades of thought in this column: if there is a chief anxiety, it is Robertson's objection that space scarcely permits “a timely seasonal ornithological exposé on so broad a canvas”: “to summarize a season coherently within *American Birds'* Procrustean limits is a nightmare.” But these constraints have produced some of North American field ornithology's most illuminating journalism. Take a day, if you have not already, to read some of the Changing Seasons of decades past, and the winter season reports of Paul E. Lehman, Paul DeBenedictis, Claudia P. Wilds, Diane Larson, Charles D. Duncan, and Carl E. Bock, as well as those authors cited herein, will put this season's discoveries into deep perspective—and too provide a lasting sense of the intellectual history of modern field observation of birds.



Part of a widespread invasion that stretched from British Columbia to New England, this Northern Hawk Owl was captured on film while it hunted Jefferson Meadows, New Hampshire, on 10 December. Photograph by Steve Mirick.

The Weather Report

This winter showed a familiar east–west bimodal pattern, as the polar jet stream's wave form dug a deep trough well into the eastern half of the continent but rode high over nearly all of the far western. The result east of the Continental Divide was a very cold winter—an “old-fashioned” winter as Robert Leberman, Ken Brock, and Brian Dalzell dubbed it, the “real thing” as Pam Hunt penned of New England's harsh season. In much of the West, the season was near average in temperature or even, relatively speaking, quite warm. Roughly, the winter resembled that of 1980–1981 (Petersen and Forster 1981).

From the eastern portion of the prairie provinces, the easterly northern Great Plains into the Middlewestern Prairie, east through Québec to the Atlantic Provinces and eastern seaboard, and even south to the Gulf of

Mexico, low temperatures and (up north) heavy, regular snowfalls put regional editors in mind of past decades. Iowa had the second coldest December in 126 years; Minnesota's was the third coldest since 1895. December in Chicago saw the highest snowfall of *any month* on record, and the winter's 660-cm (240-in) snowfall total in St. John's, Newfoundland is bested only by the record snowfalls of 1882.

The pattern of those warm, dry eastern winters of the second half of the 1990s was decisively broken in 2000–2001, shattered in some places, particularly north of the Mason–Dixon line's latitude in the eastern half of the continent. Even as far south as the Rio Grande Valley and southern Florida, where freezes did moderate damage, there were significant periods of harsh weather. "We actually had a winter!" Chuck Sexton exclaimed. From a meteorologist's perspective, however, the winter was merely a return to near "average" in many places: it may be that the previous four mild winters made 2000–2001 seem all the more frigid by contrast.

In the prairie provinces of Canada, the jet stream generally cut through Saskatchewan, so that Manitoba and eastern Saskatchewan had a "terrible," "brutal" winter according to Rudolf Koes and Peter Taylor—in fact, it was the coldest December on record in Winnipeg in over a century, with very heavy snowfall. But the remainder of Saskatchewan and Alberta had both warmer temperatures and less precipitation. Similarly, the Northern Great Plains showed two distinct patterns: the eastern Dakotas, northwestern North Dakota, and northeastern Montana had heavy snow, but the rest of the Region had only light to moderate snow amounts. In both of these regions, December and February temperatures were below average, but January was rather warmer, as the polar jet buckled a bit. Light snows were also the rule in Idaho, writes David Trochlell; the absence of Pacific storms made for the sixth driest winter on record and a season about average temperaturewise there. Colorado was apparently cold but moderated toward winter's end.

In the Great Basin through Arizona and New Mexico, conditions were noticeably mild, with a good amount of precipitation in Arizona and New Mexico, and much the same was the case in California. On the Canadian and Alaskan Pacific coasts, "mild" would be putting it mildly. "Weatherwise, winter 2000–2001 barely happened, at least where birds and winter movements are feasible, i.e., south of the Brooks Range" notes Thede Tobish of Alaska's nonwinter. As for most everywhere else in the far West, snows were very light and water remained ice-free or at least open much later than is typical. "All area reports included mention of lengthy periods of warm, storm-free conditions," and, surprisingly, "the Anchorage area never registered below zero all season." In British Columbia and the Yukon, it was "another winter without a winter" and one without much in the way of precipitous Pacific storms after early December, according to Donald Cecile. In Oregon and Washington, Steve Mlodinow and Bill Tweit document drought or near-drought conditions through the period and a snowpack in most of Washington below 70% of normal. The news media made much of these drought conditions over the winter, and the predictions from NOAA are for it to continue for much of the summer. Such dry conditions could fuel an exodus of montane species similar to the one documented in autumn 2000, which persisted in the Southwest and far West through the winter.

Hawk owls

This was certainly the winter of the Northern Hawk Owl, a species that lives its life remote from the broad mass of birders and so is especially prized when encountered in the field. Comparing flights of owls from winter to winter can be tricky, but it would not be incorrect to say that this broad southward movement of hawk owls, stretching from British Columbia and Washington to the Atlantic Provinces of Canada and New England, was one of the very largest on record. As is typical, the southern reaches of Canada and the state of Minnesota had the lion's share of hawk owls, but the invasion's front was unexpectedly, unusually broad, if not uniformly intense in all areas of south-

ern Canada. Québec, through the middle of March, had a staggering **209** reports of this conspicuous little owl, almost a hundred more than in 1991–1992 (Kaufman 1992, Yank and Aubry 1992). In Ontario, Hugh Currie notes that there were "many" hawk owls in the Thunder Bay area, but that most stayed up near the Canadian Shield, with at least 13 noted in other areas. To the west, Rudolf Koes and Peter Taylor report "unprecedented movement" in the Calgary region, "fair numbers" in Saskatchewan, and many in Manitoba, up to six per day, "but numbers were barely 15% of those in the huge 1996–1997 invasion" (cf. Koes and Taylor 1997). Still farther west, no fewer than **75** hawk owls were located in the Interior of British Columbia, a record tally, with the most southerly being from Anarchist Mountain in the southern Okanagan and few near the coast. In Minnesota, there were **159** reports, 17 above the old record set nine winters ago (Granlund 1992). Minnesota, much as did Manitoba, saw many hawk owls on the edges of, or away from, typical coniferous habitat, which was unusual.

At lower latitudes, on the fringes of the flight, the numbers of hawk owls were typically in the single digits. Michigan had six reports, one as far south as Manistee County, and Wisconsin had two. The Atlantic Provinces noted a "minor invasion" of the species: New Brunswick saw eight, Prince Edward Island one, and Nova Scotia (where very rare) four, one as far south as Chebogue Point, Yarmouth. In New England, hawk owls appeared for the first time since 1998. New Hampshire held two, including a very popular bird at Whitefield Airport, Maine had three, and two were in or near the Adirondacks of New York. On the western front, the invasion in Washington, where the species is quite rare, continued from the late fall, with two more birds recorded.

Donald Cecile in British Columbia writes: "Presumably, a successful reproductive year encouraged this movement, and the reduced snow cover may have assisted their success. Often when such invasions occur, there is also a high incidence of injured or starving birds, but this was not the case in 2000–2001. Not only was there a lack of such reports, but birds that were closely observed were noted to have been highly successful at capturing prey, even along busy streets." The more information that can be gathered of this sort, the clearer the picture will be of the magnitude of this flight and its possible causes. Peder Svingen (psvingen@d.umn.edu) is preparing a paper on the hawk owl flight of 2000–2001; do send him your observations and data.

The invasion of Great Gray Owls, geographically more limited than that of hawk owls, was nevertheless a most substantial one, spreading from the Yukon, British Columbia, and Saskatchewan east to Québec. It was hailed as the second largest flight on record in several regions. In outlying areas, Alberta numbers were considered "average," and none were reported from the New England or the Hudson-Delaware regions, so unlike the 1978–1979 invasion (Vickery and Yunick 1979). But for Manitoba, northern and western Québec, northern Ontario, and Minnesota, Great Grays were ubiquitous.

Most Great Grays in Manitoba were observed from roads at the edge of boreal forest (or the forest interior, by snowmobilers), and scattered individuals reached farming communities of the prairies such as Melita. Try to read these lines from the Prairie Provinces' report without a drop of the jaw: "Birders routinely found 20 to 50 Great Grays per day in Manitoba, and two manic observers found no fewer than **101** in the Lac du Bonnet–Pine Falls area on 20 January." Note the use of the word "routinely."

Now, admittedly, these observers were out looking for Great Gray Owls specifically, and the account of their Big (Gray) Day, posted on the Internet, made for fascinating reading. But birders elsewhere in Canada and in Minnesota saw their fair share. In Saskatchewan, a high count of 21 was made on a cross-provincial journey in early January, and there was another one-day count of ten. In Québec, **104** birds were reported through mid-March, the second largest number on record, with most birds noted in the Saguenay-Lac-Saint-Jean and Québec City vicinities. In Ontario, Thunder Bay had a great many Great Grays, while near

Peterborough there were some 27 and about 27 reported elsewhere in the province. Great Gray Owls swept into Minnesota in droves, where 300+ reports represented the highest ever noted, with (as for hawk owls) a few birds beyond the coniferous belt. Michigan had as many as seven, far fewer than in 1991–1992, while Wisconsin held at least four.

As for the hawk owls, observers commented on the birds' apparent vigor. The Great Grays handled and banded in Manitoba "were generally in excellent shape and included some of the heaviest ever recorded." Mortality, unfortunately, was rumored in Minnesota, where some birds were allegedly killed "to save the grouse," whereas other Great Grays were killed by vehicular traffic, as happens in each such invasion.

The hoped-for grand invasion of Snowy Owls never really materialized, though regions from Washington to the Middle Atlantic reported modest numbers continuing from the late-autumn push. In Washington and Oregon, as for Québec, numbers were "above average," though it was "definitely not an irruption year." Other than 15 in the Standard, Alberta area, numbers were "unremarkable" in the rest of the prairie provinces. Most of the Atlantic Provinces, with the exception of Newfoundland, recorded a "minor invasion" of Snowies. Thirty-four reports from New England is respectable, certainly, but not a grand slam, nor were the fewer than 100 in Minnesota or the "lackluster" numbers from Michigan. Only in Wisconsin, where 14 counties reported the species, was it considered a "good" winter for the species.

Boreal Owls in winter are rarely seen in the boldfaced numbers of Great Grays and hawk owls, but Minnesota had 110 reports of Boreals this season, a very decent winter. Ontario's winter tally came to 35, also above average. Ten Boreals were part of a mid- to late-winter movement in southern Manitoba, four were on the Edmonton C.B.C., and Michigan birders found five in that state. On legendary Amherst Island, Ontario, Boreals peaked at four in mid-January, along with up to 30 Short-eareds, 20 Long-eareds, 13 Snowies, and 11 Northern Saw-whets; all but the Saw-whet count are substantially lower totals than those of some winters past (e.g., Bell et al. 1979). A dead Boreal was found at Sackville, New Brunswick, the farthest southeast of its kind. No other mention of mortality in that species was made, but Brian Dalzell reports that deep winter snows seemed to be linked to "considerable mortality of Northern Saw-whet Owls in the Maritimes. Reports of tame and/or emaciated (upon examination after death) Saw-whets around bird feeders began to surface in early January, especially in Nova Scotia." Almost everywhere else, Saw-whets appeared to remain "north of normal," as Jim Granlund put it, although the Central Southern region got a single Saw-whet, a third Mississippi record right on the Mississippi State University campus in late December, and Texas saw a surfeit of the species. Not to be overlooked, though extra-seasonal, a Flammulated Owl was found dead in Edmonton, Alberta last fall, a first record for the province.

In light of this past winter's magnificent invasion of Great Gray Owls and especially Northern Hawk Owls, it was tempting to attempt a reflection on modern birding culture's fascination, nigh on obsession, with these raptors. Human cultures have sometimes revered, more frequently feared and demonized owls, but our own relation reflects an extreme of desire for proximity when northern owls come south, birders want to see them, and so they're some of the best documented of all the irruptive birds. This is good; it makes tracking their numbers far easier than tracking those of many other birds. Whatever motivates this desire—owls' apparent scarcity, the remoteness of their nesting areas, their penetrating gazes, their approachability when found—it's clear, as birding waxes in popularity, that these visitors are increasingly visited, a delight to the local Chambers of Commerce but perhaps not to a roosting owl. Too many accusations and admonitions have been posted on the Internet, too many stories of roost disruptions and angry landowners, to imagine that there will be a simple solution to the violations of decency, against people as well as owls, in the name of "birding" or "owl-

ing." Clear-thinking birders and ornithologists have a responsibility to be vigilant on behalf of both birds and birding in such cases.

Sprites of passage

It seems there will not, in the near future, be a Changing Seasons column for the winter season that dares sidestep the ongoing incredulity of most birders in the Lower 48 states: hummingbirds of many species are an increasingly prominent aspect of our winter avifauna.

Now, to back up for a moment: it is quite the case, as many editors have suggested, that this column should keep close tabs on overwintering tanagers, warblers, vireos, thrushes, and other Neotropical migrants, as the anthropogenic warming of our climate continues to produce dramatic examples—particularly dramatic when viewed synoptically—of late-lingering and even overwintering birds, some of which don't seem to require backyard feeding stations to remain thousands of km north of typical wintering ranges.

Witness: well-documented **Veeries** in Bristol, New Hampshire from October to mid-February, in Madison, Wisconsin, in mid-December (a first winter record for the state), and at Michigan's Detroit Zoo in mid-February. This thrush is virtually unknown in southern Florida after mid-October, and winter reports of Veery anywhere in North America have always been treated with great skepticism. Observers this winter documented their finds carefully, commendably, so that the species is proven to be capable of winter survival above latitude 43° N. This seems incredible. (To those boreal readers who have birded for three or four or five decades: how many winter Veeries have you seen?)

Witness: a Kentucky Warbler in Montréal's Botanical Garden through at least 5 December, an Ovenbird at London, Ontario through at least 17 December, a Lark Bunting in Perry, Iowa through 8 January, Summer Tanagers through 5 December in Faribault, Minnesota and at Cedar Mill, Oregon through March, and Rose-breasted Grosbeaks in Durham, Ontario; Boise, Idaho; Jackson County, Wisconsin; Johnson City, Tennessee; Cedar, British Columbia; Sangamon County, Illinois; Geneva, New York; Como, Colorado; and Warren, Pennsylvania.

Witness: Even farther to the south, records or numbers that would seem preposterous were equally well documented: Maryland's first winter record of Blue Grosbeak in Dorchester County 29 December; one or two Warbling Vireos from December through March on Roanoke Island, North Carolina; unprecedented numbers of Wilson's Warblers from the Middle Atlantic through Florida.

But wait. These lists seem strangely familiar. Yes, here they are: William B. Robertson, Jr.'s winter column from 1975. Or Robert O. Paxton's column from 1974. Or P. A. Buckley's column from 1973. It seems that we editors enjoy listing out the eccentric lingerers as much as ancient moralists relished listing out the dangerous vices. As Kaufman (1998) points out, "to dwell on a few gee-whiz records" is "easy—but misleading." "Every winter produces a few records of birds bizarrely far north, even if the season is an unusually harsh one." Such scattered records, an annual affair (if often "unprecedented" in their particulars), may not manifest obvious connections or causes in themselves, but they do prompt us to wonder why it is that many such birds remained and survived well after the onset of bitterly cold weather.

Most regional reports from north of latitude 39° N and east of longitude 105° W, the area with such a cold winter, are replete with remarkable records. Shouldn't this winter, with such heavy snows and cold temperatures, have been the winter with few lingerers in the hard-knock regions? From the Middlewestern Prairie region, Ken Brock echoes analyses from many sites farther east: "Despite this inhospitable environment, a fair number of semi-hardy passerines lingered in the Region." One solution to the question is to look at other resources available to such birds: as has been abundantly demonstrated in past winters, "food supplies, not temperatures, provide the key to [birds'] survival in cold winters" (Kaufman 1990). This

is not to say that intense cold cannot kill staggering numbers of birds; it certainly can and does, as this column has discussed (Smith 1977, Shuford and DeSante 1979, Knapton 1982). The column has also argued convincingly that the mildest winters produce the greatest number of lingerers and that lingering birds survive such winters more frequently (e. g., Able 1980). How then does this winter fit into those of the past?

If we look back on two or three dozen Changing Seasons columns, most of the weather patterns of 2000–2001 don't look so unusual, nor does the situation with lingerers look wildly out of kilter with similar winters of the past. So if food supplies were there, then what seem at first to be extremes fall roughly into line with what we might expect in a continental perspective. (It might take me years personally to get used to the idea of Warbling Vireos wintering on Roanoke Island, but in the big picture, my astonishment doesn't matter. As Robertson [1975] wrote: "The many mid-to-late winter reports of 'tender' species in remarkable places rudely shook the belief that winter stragglers only delay their death date. But it is no doubt too soon to suggest that migration is becoming obsolete.")

Too, the extreme examples of overwintering sometimes overshadow what would seem to be more mundane phenomena. Quietly, a fairly wide variety of birds is staying farther north, staying longer, and in some cases, not leaving at all. Many of the common nesting species that rarely raise eyebrows on the margins of the winter months (and are unlikely to draw the reader's eye when browsing the regional reports) are establishing a regular winter-long presence in areas where they would have been considered unheard of or at least genuine seasonal rarities only a few years ago.

Consider a few examples in regular typeface from just one region, the Atlantic Provinces: American Robins remained in western Labrador all winter, apparently healthy; ten Double-crested Cormorants spent all winter on Newfoundland's rugged Avalon Peninsula; an Osprey remained on Cape Breton Island through year's end; and Carolina Wrens and Northern Flickers made it through, despite all odds. Kaufman (1998) consistently suggested that readers take careful note of birds wintering "just a bit north of usual range," as such records, he felt, were "more likely to lead to actual consolidations of range extensions." In the cases of all these species, one can make an argument for just such a long-term trend. The slightly milder oceanic climes of the insular Atlantic provinces probably permit more species to maintain a toehold here, but western Labrador is not similarly hospitable, and the subtle trend of small-scale northward winter range extensions certainly manifests itself in the interior states and provinces too, if not uniformly or neatly.

This column frequently entertains but rarely answers the open question: What is one to make of what these observations, which undoubtedly indicate changes in the distribution of many bird species? Most speculation remains modest (Robertson [1975] goads: "...but the timid must be conventional"), as a single season's records necessarily cannot provide a sufficient base of data for grand inferences. Indeed, even close statistical readings over longer periods, such as Steve Davis's look at Hooded Merganser's increases on 1980s and 1990s New England C.B.C.s (forthcoming in this journal), often cannot resolve questions of causality that arise when one notices and even clearly demonstrates change.

To investigate connections between overwintering birds and temperature/weather patterns thoroughly would require analysis of a whole set of variables that can be difficult to quantify or study: mortality; availability of food (American Robins in Newfoundland took advantage of the Mountain Ash crop; others in New Brunswick were observed feeding on mudflats in midwinter—on marine worms and mud shrimp!), immediate ambient temperatures (metropolitan areas and some microhabitats stay significantly warmer than surrounding areas), and for some species the changing availability of open water (natural or artificial). And there are other considerations when birds linger into the late fall—in some cases having landed

far to the north because of weather-related bad luck—at what point does southward movement become energetically impossible? Such lingering questions may express limits to our understanding of birds' behavioral responses to both local and global changes in climate. But we continue to tender our observations in the expectation that what the near term cannot resolve the long term may yet unfold.

Hummingbirds that don't fly away

To return to our original topic: hummingbirds, though we know them to be tenacious customers able to withstand Alaskan springs and trans-Gulf flights, hold a place of wonder in most observers' minds. It seems incredible to most of us, even those scientifically trained, that birds weighing no more than a tenth of an ounce, as a Calliope Hummingbird, could be able to withstand winters such as that of 2000–2001; they seem to represent an extreme case of hardiness. Calliopes made headlines from Virginia—where a state-first bird survived temperatures below zero degrees C through New Year's Eve—to Georgia, where *five* were banded (the state's third through seventh records), to Hamilton County, Tennessee at the end of January, to the offices of the Tucson Audubon Society all winter, which, editors Gary Rosenberg and Roy Jones note, represents only the second winter record for Arizona. Dwight Cooley documents "a major invasion" of Calliopes into the Central Southern region, an area that had its first record only in 1998! Unknown in that Region prior to 1998, single Calliopes were at two sites each in northwestern Florida and Alabama; each area now has about a dozen records of the species. Chuck Sexton exclaims on "an amazing four" at Austin feeders in December and January and four more elsewhere in Texas. What caused these Calliopes to hang around (free imitation nectar) is less mysterious than what caused them to move into Texas and the southeastern states in the first place, but it may be that the little *Stellula* is beginning to show patterns that *Selasphorus* has shown for two decades on the Gulf Coast and in the East. Presumably, the more successful these mites are at incorporating the Southeast into their life cycles, the more we'll see in future winter seasons.

North of Mexico and Central America, regional reports detail the presence of *thirteen* species of hummingbird in the winter season: Broad-billed, Broad-tailed, Rufous, Allen's, Calliope, Violet-crowned, Black-chinned, Ruby-throated, Anna's, Costa's, Magnificent, Buff-bellied, and Green-breasted Mango—both the continuing bird at Concord, North Carolina, and another in McAllen, Texas, in February. Only a few regular North American breeding species and casual species went unrecorded.

What is most surreal to long-time birders is that this spectacle is now expected: recall the shock waves when the first Black-chinned Hummingbird for Massachusetts was documented in these pages (Heil 1981)? Now such a bird would be have to wait in line (or: on line): vagrant and tardy Black-chinned Hummingbirds numbered four each in North Carolina and Georgia, one each in Colorado and South Carolina, and a possible bird in Portsmouth, Virginia. The hardy Anna's Hummingbird put in appearances at feeders in unexpected places such as Llano and Hays Counties in Texas, in Bend, Oregon, and Wenatchee, Washington through February, where considered extremely rare in winter, and in Snellville, Georgia (that state's third). Equally noteworthy, Donald Cecile documents three from the British Columbian Interior, including a male at a Prince George feeder until 10 December that finally "succumbed to overnight temperatures of -25 to -30 degrees C." Likewise, Broad-tailed Hummingbirds came east and stayed. Georgia's third continued from the fall season, another was in West Pensacola, Florida all winter, another in Niceville, Florida (the latter two the state's second and third), and still another in Diamondhead, Mississippi in January. A Broad-tailed was unusual in Tucson in early December.

So why are so many winter regional reports now filled with paragraphs about hummingbirds, as they certainly were not in the 1970s?

After all, the typical winter ranges for most hummingbirds (Anna's is an exception) have not normally included the United States—at all. These are obligate migrants, nectivorous and insectivorous, and not often observed in northern climes far from a feeder in winter. Should we credit the slew of hummingbirds to the steady increase in feeding stations, in bird enthusiasts, in communication among birders? And is it the case, as sometimes maintained, that some hummingbirds are gradually, year to year, changing the fundamentals of their behavior in *anticipation* of the availability of artificial food resources? To what extent does the severity of the season matter in such cases? More time may tell. As Michael Patten (2000) wrote of the hummingbird pageant of winter 1999–2000: “If global warming is real and will occur as quickly as some fatalists predict, the hummingbird show this winter will look tame ten years from now.” The hard winter of 2000–2001 surpassed that “mildest of winters” (1999–2000) in its vagrant hummingbird spectacle, it would seem, so we should maintain an open mind when we link these records to atmospheric trends, however intuitive it may seem to assume that these small birds require balmy conditions to survive or to overwinter.

Fill your feeders, and they will come. Fortunately, for the annals of bird study, there is a growing group of carefully trained specialists who can assist those with difficult-to-identify hummingbirds in documenting their feeders' patrons. Many a *Selasphorus* (and even *Stellula* and *Archilochus*) in these pages would have gone unidentified to species had it not been for the cooperation of these professional and amateur scientists over great distances and many years. From those of us who have enjoyed the fruits of their labor (the hummingbird identification sections of recent field guides; or the hummers themselves), support for organizations such as the Hummer/Bird Study Group (Clay, Alabama) would recognize their long-term commitment to this delicate work.

Juncos' junkets

In the northeastern reaches of the continent, few winter finches were in evidence (as was true elsewhere), but unusually high numbers of Dark-eyed Juncos and White-throated Sparrows overwintered. In Nova Scotia, near-record numbers of White-throated Sparrows were detected, with only the gruesome winter of 1976–1977 recording more. More than 10,000 Dark-eyed Juncos were counted in the Maritimes, almost twice the previous high. Indeed, in New England, Pam Hunt called 2000–2001 “The Year of the Sparrow.” Hunt suggests three possible causes for the influx: “1) they had a very productive breeding season in 2000, 2) large natural food crops caused them to stay farther north than usual, and 3) cold weather in Canada caused them to move farther south than usual. The latter two, conveniently, are testable hypotheses, using C.B.C. data and other regional reports.” It may very well have been, in part, the deep snow to the north and west—Québec to eastern Saskatchewan, through the Great Lakes and Middlewestern Prairie—of the affected regions that drove these snowbirds down in such numbers. In New England, other Emberizidae joined the juncos (perhaps too in facultative migration), among them very high numbers of Eastern Towhees, Savannah Sparrows, and Fox Sparrows, whereas in Nova Scotia, all-time record numbers of wintering Song Sparrows were found. It's interesting that in the Appalachian and adjacent Central Southern regions, south of the very snowy Middlewestern Prairie region, the winter of 1977–1978 (another cold one in the East) serves as point of comparison for the tremendous flight of American Tree Sparrows observed in 2000–2001. Even northern Alabama and Mississippi had Tree Sparrows, and counts as high as 124 (!) came from the Tennessee C.B.C.s. No other regions commented on juncos or these species of sparrow to this degree, though Arizona noted higher-than-normal numbers of Dark-eyed (Slate-colored) Junco, and the Middlewestern Prairie and Western Great Lakes

regions reported good sparrowing, possibly owing to increased visibility at feeders and in snow-free areas.

In the West, something was afoot with White-winged Juncos as well. This form—one strains to write: *species*—normally winters not far from its breeding areas (chiefly in Wyoming and South Dakota), but it can be found in Colorado, Nebraska, and sometimes Kansas and New Mexico in winter. The El Paso bird discovered by Barry Zimmer in late November continued through early December, and the Texas Panhandle had *three* more still! In Arizona, Rosenberg and Jones called the White-winged's invasion “the birding event of the season”: as many as 14 were in Flagstaff, seven around Prescott, and two singles made it to southern Arizona. The only previous state records had been in the winter of 1936–1937 and in 1971. In New Mexico, where there are more records of the species, one made it south to Las Cruces for much of December and early January. The prize for long-distance movement, however, went to the White-winged that made it to Bishop, California, in late December, a second Regional record there

Sacré bleu

In the absence of more mass movements—winter 2000–2001 saw few finches on the move, only modest-to-good numbers of Gyrfalcons, Rough-legged Hawks, Northern Shrikes, and Northern Goshawks in the East, and the tail-end of a montane exodus in some of the West—we offer for edification an overview of noteworthy records from the Yukon to Panamá.

In addition to a scattering of **Pacific Loons** from Maine to New Mexico, now an annual occurrence, a **Yellow-billed Loon** was found in the Brownsville Ship Channel, Texas, the first ever for the Gulf of Mexico and only Texas's fifth, as if to prove Michael Patten's point (2000) about the recent trend toward extraordinary southerly vagrancy in the species. Another was at Farmington Lake, New Mexico through the end of January, that state's eleventh in as many years. Perhaps Mexico is next.

In tubenose news, the Atlantic was quiet, other than rare-in-winter **Sooty Shearwaters** off Virginia Beach, Virginia and Hatteras, North Carolina. On a Westport, Washington trip 27 January, an immature **Short-tailed Albatross** nearly outnumbered the single Black-footed Albatross seen that day! It was a ninth Regional record since 1950. A **Buller's Shearwater** off Oregon 7 January would be a first winter record for the Region, while a **Greater Shearwater** off Pt. Pinos, Monterey County, California 13–15 January would be the third North Pacific record.

An adult **Masked Booby**, only the fourth for Belize, sailed by a boater off Glovers Reef 19 December, and a **Brown Pelican** on Block Island, Rhode Island two days later might have preferred Belize.

An incredibly late **Least Bittern** tarried in Greece, New York on the wild date of 17 December. A **Cattle Egret** at Cypress River, Manitoba hung out in a feedlot into early December, a Regional first in winter (these hardy creatures have reached Antarctica, of course, so Manitoba may be small potatoes). Those who know Brevard, North Carolina will be shocked to learn that that town's **Great White Heron** remained through 25 January; this form of Great Blue Heron has overwintered on the Outer Banks of North Carolina recently. Two **Gray Herons** and 22 **Little Egrets** were counted on the Barbados C.B.C., the latter the highest count in the West Indies and the New World.

Washington's first **White Ibis** was at Bay Center in late December and then found again in January near Raymond; it may have been the same individual noted earlier at Newport, Oregon. An impressive 3460 White-faced Ibis were near Marysville, California on 14 December, and three were with wintering Glossies at St. Marks N.W.R., Florida in February, that state's tenth record. The **White-faced Ibis** found at Savannah N.W.R., South Carolina in the fall season also remained throughout the winter.

Five **Whooper Swans** at Lower Klamath N.W.R., present from 1 January through the end of the period in California, wandered into

Oregon 18 February; it is not clear at this time whether the birds comprise a family group or whether the young are of hybrid origin. A **Bewick's Swan**, rare anywhere in North America, was reported in Kilby Provincial Park, British Columbia, in early December.

Black Brant, though very infrequently encountered in the East, are being detected more and more regularly: New York and New Jersey each had one, continuing a recent trend, and one was at Greeley, Colorado 15–21 January. Perhaps an even rarer bird in New Mexico, a single Black Brant was noted 18 December, appropriately at Brantley Lake, the fifth state record. A single juvenile *hrota* **Brant** overwintered at Bermuda, where any brant is equally rare (two forms have been recorded there).

An errant **American Black Duck** in Nez Perce County, Idaho remained until 10 December. A female **Green-winged Teal** was only the second ever recorded in Panamá; a female **Garganey** was a second Barbados record, seen on two dates. A female **Harlequin Duck** wintered at Black Hills Reservoir in inland Maryland from December through February, almost unprecedented in that Region, while 15 **King Eiders** in the Lake Ontario Littoral, Oswego County, New York 24 February made nearly a record local count from the area and a fine tally anywhere in the interior of the Lower 48. A highlight of the year for the many who trekked out to see it, an adult male **Smew** at Riverlands Environmental Demonstration Area, Missouri was found 13 January (refer to the Middlewestern Prairie report for the charming story of its discovery); it stayed through the season. Another adult male was at Malheur 26–28 February, a second Oregon record. Three **Red-breasted Mergansers** were believed to be first records of the species for Belize.

Washington state had a whopping eight **Red-shouldered Hawks** this winter, indicative of a foothold in that state, where it was unknown prior to 1979. A **Roadside Hawk** 11–15 December at Bentsen-Rio Grande State Park in Texas was that state's (and the U. S.'s) fourth. An adult **Harris's Hawk** near Sorrento, Louisiana 4 January was quite unusual for that state, but the winter season's prize raptor was a **Zone-tailed Hawk** at Big Pine Key, Florida 3 December and Boca Grande Key, Key West N.W.R. 12 December. The species is virtually unknown as a vagrant in the East. A **Long-winged Harrier** was noted at the El Real airstrip, Darién on New Year's Day, a second for Panamá and for Central America. A **Bald Eagle** was observed off and on at Abaco, Bahamas for almost two months; the species is incredibly rare here and anywhere off the mainland from Bermuda southward.

Rare in the Central Southern region, Alabama's first **Crested Caracara** was videotaped in Baldwin County 19 January, and a handful of the species made it to Louisiana. Crested Caracara has been reported in Belize on several occasions in the past, but good documentation came only last year, 17 December in the Orange Walk District.

Alabama had another good raptor, its third **Prairie Falcon** near Guntersville Dam 6 January, the area from which its other records are known; nearby Arkansas had two, and one was in South Carolina in the ACE Basin 13 January. Though the question of origin is often raised, South Carolina has had records of this species in the past, and other records in the Southeast suggests a weak pattern of legitimate vagrancy. Southern New Mexico's pair of **Aplomado Falcons** was seen courting and possibly preparing to nest 20 February.

In the "hey-what's-this" department, **Common Moorhen x American Coot** hybrids at John Martin Reservoir, Colorado and Point Reyes National Seashore, California, both in February, must have gotten a second look, likewise a post-New-Year's-Eve **Purple Gallinule** on Martha's Vineyard. Cranes in Cumberland County, New Jersey perplexed observers all winter. At least nine and possibly as many as 14 birds have been present here for some time, and these appear to include at least one **Common Crane**, six **Sandhill Cranes** (very unusual but increasing on the mid-Atlantic seaboard), and

seven apparent hybrid **Common x Sandhill Cranes**. Read the Hudson-Delaware (and Spring Southern Great Plains) reports for details.

It was a magnificent winter for those who like plovers (everyone, certainly). A **Eurasian Dotterel** was photographed with Mountain Plovers near Calipatria, California 22–23 January, a Regional first and first winter record for the United States. A **Mountain Plover** at Ilwaco, Washington around the holidays was that state's third. More astounding still, a **European Golden-Plover** was Alaska's (and the Pacific Basin's) first at Ketchikan 13–14 January. A **Northern Lapwing** at Ferryland, Newfoundland, also around the holidays, made many a birder merry, but unquestionably the bird of the winter was the **Greater Sandplover** found 29 January and studied by many hundreds through early April at Bolinas Lagoon, Marin County, California—a first for the Western Hemisphere. Read the Middle Pacific Coast report for more details of this stunning and subtle discovery.

A **Black-tailed Godwit**, Hawaii's first, island-hopped from Maui to O'ahu through the winter, while a **Marbled Godwit** at Souris, Prince Edward Island on Christmas Day was a first Regional winter record. A **Dunlin** at Lee Metcalf N.W.R. 6 January represented a first winter record for Montana, and a **White-rumped Sandpiper** in Sarasota County, Florida in mid-January would be the state's first verifiable winter record (of some 20 reports, the first by one J. J. Audubon).

An adult **Long-tailed Jaeger** seen from a Point Judith, Rhode Island seawatch in mid-January is on par with nearly any vagrant reported herein: there are few if any verifiable midwinter records for the North Atlantic. An unidentified **jaeger** in Hughes County, South Dakota 13 February likewise boggles the mind.

The Hudson-Delaware region boasted 17 gull species, 13 of those on Long Island, including a **Black-tailed Gull** at Jones Beach on New Year's Day, a state second. (Why these birds roam the Atlantic but hardly the Pacific coast continues to be a mystery.) **Laughing Gulls**, enigmatic wanderers that have reached Australia and beyond, staged an unprecedented winter movement into the interior of Alabama, Mississippi, Louisiana, Tennessee, and Arkansas this season, with *no* clear weather event to connect to the movement. In the same vicinity, four **Little Gulls** were in Arkansas this winter, where they have had almost no history of occurrence. A **Black-headed Gull**, rare in California, frequented Goleta in December, and Florida's **Heermann's Gull** from last autumn moved up and down the peninsula most of the winter, to the cheer of local birders.

The proliferation of Lesser Black-backed Gulls (Leukering 2001) continued unabated this winter, and astute observers zeroed in on single **Yellow-legged Gulls** on Nantucket 28 December and at St. John's, Newfoundland through the season. To the south, an adult **Kelp Gull** at Barbados was West Indies first; Maryland's reliable bird at Sandgates, "Shrimpy," continued through the season.

High-arctic gulls visited. **Ivory Gulls** stole the show in Ontario: of three birds, one posed on the Amherst Island ferry route 3–17 January (a bonus for those enjoying the bevy of owls there). Far rarer still, single **Red-legged Kittiwakes** were seen 13 February in Marin County and seven miles off Santa Cruz County, California 26 February. The state had only a single previous record of the species.

Terns were not much in the news. An **Elegant Tern** at Fort De Soto County Park, Florida for most of December into early January was near the site of Florida's 1999 record but was certain to be a different individual. Alcids elicited a bit more comment. Twenty-four **Atlantic Puffins** just off Hatteras Island, North Carolina 18 February represented a record high count for this far south in the western Atlantic; the state had only four previous records. The same state's first documented **Common Murre** was just offshore at Buxton 2–3 February, noted from shore as well as by boat. Far farther north, a flight of **15,000+ Dovekie** passing

White Head Island in the Bay of Fundy in just four hours on 5 February was called "unprecedented" for that area.

Four **Eurasian Collared-Doves** from August through February in Idaho were the first to reach that state (one of the last western states to record the species), while White-winged and Inca Doves continued to be found far from typical range.

A **Red-breasted Sapsucker** was seen at Big Bend Ranch, Presidio County, Texas 3 December, a second state record; two sapsuckers in Arizona this winter approached pure Red-breasted in plumage, but the hybrid situation there continues to cloud identification. A **White-headed Woodpecker**, a "mega" in British Columbia, was reported from Anarchist Mountain 26 February, while the Yukon held an incredible **Pileated Woodpecker** at Upper Liard 18 December. A **Downy Woodpecker** at Parque Morelos, Tijuana, 27 February was only Mexico's third or fourth, whereas a **Red-shafted (Northern) Flicker** in Grady County, Georgia was a state first. There are very few records of this form on the East Coast.

A **Mouse-colored Tyrannulet** on the Rio Salto near Agua Buena in February and March was the first one seen by birders in Costa Rica (several have been caught in banding operations); the first country record came only in November 1995. Continuing from the fall season, the **Hammond's Flycatcher** in Bethlehem, Pennsylvania stayed until 22 December, one of only a few eastern records.

Leading the list among the wintering *Myiarchus* flycatchers, California's first **Nutting's Flycatcher**, found 11 November in Irvine, stayed through the period. An **Ash-throated Flycatcher** was reported from Reifel Island, British Columbia, for that Region's first winter record; another at Safe Harbor Dam, Pennsylvania, around the holidays, will make for a second state record. In the incredible state of Louisiana, a **Brown-crested Flycatcher** was on the Venice C.B.C. at year's end; on the same C.B.C., a **Say's Phoebe** and a **Great Kiskadee** furnished equally heavy records for the Central Southern region.

Kingbirds are often bright spots in the winter months. A **Thick-billed Kingbird** continued at Half Moon Bay, California through the end of February. A sometimes-calling **Tropical Kingbird** was at Fort Myers Beach in mid-January, and that state's eighth and ninth **Cassin's Kingbirds** were discovered during the same period. In Washington and Oregon, **Tropical Kingbirds** remained at several locations following the fall's invasion; the Region had only two previous winter records of the species. Another Tropical at Worlds End, Hingham, Massachusetts, left soon after its November visit.

Belize's first **Blue-headed Vireo** was at Belmopan on Christmas Day and was recorded on its C.B.C. the next day. Not too far away, the Petén's first **Warbling Vireo** was noted in San Andrés 17 January. A **Mexican Jay** in El Paso 24 January was of the *arizonae* race, a first for Texas. A **Carolina Wren** continues to be seen at Cook's Lake, the only record for Arizona, while two **Black-capped Chickadees**, known from fewer than ten records in that state, were documented at Teec Nos Pos from December through February.

It was a truly fine winter for **Varied Thrushes**. From New Mexico and west Texas, north through the Dakotas and the Great Lakes, and eastward to the Canadian Maritimes and New England, Varieds showed up in near-record numbers in some areas: almost 50 were noted away from typical wintering range in the far West. **Townsend's Solitaires** were also reported widely, from Ohio to Arkansas. Both western frugivores have shown odd dispersal patterns in past winters (e. g., Kaufman 1990, 1993), and dry conditions in the West could play a role in such movements.

But far-flung thrushes were most in evidence in the northeastern section of the continent: New Brunswick had its second **Mountain Bluebird**, multiple **Fieldfares** were in Newfoundland, Québec, and New Brunswick, and a **Redwing** in the latter province was its first. A **Rufous-backed Robin**

in Big Bend's Rio Grande Village at year's end was about Texas's tenth.

Wagtails are not usually a part of the winter season report, but one actually spent this "warm" western winter at King Cove on the west end of the Alaska Peninsula, surviving well into March. It was thought to be an immature Black-backed, but there is as of this writing no consensus. There are no records of the genus from Alaska past middle October. In Santa Clara County, California, an adult **Black-backed Wagtail** was present through the winter, a seventh Regional record but again the first to overwinter here. A belated report came in of Washington's second **Yellow Wagtail** from Ocean Shores 14 September 2000.

Wintering warblers of many species were much in evidence around Guerrero Negro, Baja California in mid-December, among them a male **Belding's Yellowthroat** rather far from known range; this species is threatened, and carefully documented reports from Baja would be welcome submissions to the new team of editors for this Region. In Belize, a **Yellow Palm Warbler** on Ambergris Caye 8 December was photographed, perhaps the first fully confirmed record for the country.

MacGillivray's Warblers were widely reported. Nova Scotia's first, a lingerer from the fall season at Halifax, lasted at least through 4 December, while British Columbia had only its second winter record at Vancouver 17 December. Pompano Beach, Florida held Florida's fourth 17 February to the end of the period. **Audubon's Warblers**, also scarce in the East, were noted 30 December at Cheapside, Virginia and at Ninigret N.W.R., Rhode Island 23 December, a state second.

At Spanish River Park, Florida, a female **Western Spindalis** (formerly Stripe-headed Tanager) was present between 9 December and early January, while a male **Rosy Thrush-Tanager** at Valle Azul near Cañas Gordas was the first reported in Costa Rica in some time. A male **Cuban Grassquit** reported at Miami Beach 10 December would be about the Region's eleventh if confirmable. Only Florida's fifth, a male West Indian **Yellow-faced Grassquit** was at Eco Pond in Everglades National Park 20 January through 5 February. Possibly Guatemala's first, a female **Blue Seedeater** was at Baja Verapaz, Biotopo del Quetzal 3 February.

In Maryland, few birds were rarer this winter than the **Green-tailed Towhee** in the North Branch area of the C&O Canal on New Year's Day; one at Ledgewood Beach furnished Washington's third winter record (and only western Washington's third at any time). A **Lark Sparrow** in Guanacaste Province 6 November was Costa Rica's third, whereas a **Black-throated Sparrow** in Dane County was Wisconsin's seventh. A **Chestnut-collared Longspur** at Jones Beach, New York 5 January was New York's sixth but first in midwinter; six **McCown's Longspurs** at Lower Klamath N.W.R. into March furnished Oregon's fifth record. A **Pyrhuloxia** spent December at a Billings, Montana feeder, providing a remarkable state first. Lone male **Lazuli Buntings** were at Luling, Louisiana 16 January and the Garden of the Gods, Colorado on the next day.

Single **Great-tailed Grackles** established a state second for Washington at Stanwood and a provincial third at Kelowna, British Columbia. A **Common Grackle** at Apache Lake near Phoenix 27 February and another at Rancho El Descanso, Baja California 17 December were noteworthy: Arizona still has fewer than ten records of the species, Mexico only one other record, from 1996.

Bullock's Oriole made mention in a few columns. A female at West End, Grand Bahama 2 February was a first from the Bahamas and a new West Indian record. A male in Brighton, Colorado in early January resembled a record from the previous winter, while one in Continental, Arizona was unusual in winter. In Florida, where a recent review of records had eliminated the species from the state list, observers carefully documented an immature male at Flamingo, another at Gainesville, and one at Gulf Breeze. An apparent Bullock's x Baltimore hybrid was near the Bullock's at Flamingo. Vancouver's third **Hooded Oriole**—and the seventh for British

Columbia—was at a Richmond feeder in late winter. At long last, a **Streak-backed Oriole** was documented in New Mexico, a bird at Corrales for most of December and January—an overdue but most welcome state first. One was noted wintering at Cook's Lake, Arizona as well, and breeding is suspected nearby.

It was a superb winter for fans of the dapper **Black Rosy-Finch**. Sixty-five were tallied near the Echo Cliffs, near Page, Arizona in November, and as many as **1000** were estimated at Antelope Island, Utah, in mid-January. Extremely rare was a male at Benton Hot Springs in Mono County, California from 16 February to 2 March, only the fourth Regional record. For comparative views of all three species, what locale could best the 30 December count at a Rye, Colorado feeding station: 856 Gray-crowned, 48 Black, and 67 Brown-capped? (The high count for Black Rosy-Finches at that feeder was made 27 February, with 127 birds carefully tallied.) Quite rare in the Western Great Lakes, an interior-form **Gray-crowned Rosy-Finch** in Duluth, Minnesota, represented that state's eleventh but apparently first of this form. And crowning the continent's metaphoric yule tree, an adult female **Eurasian Bullfinch** of the *cassini* form furnished a first confirmed record for the eastern Alaskan Interior over its long stay.

The Last Word

There may be a sense among some readers that to submit sightings and documentation and photographs to regional editors has an element of futility to it, that so many of these sightings don't make it into print per se (but are summarized instead), and that the summary of these summaries not infrequently concludes that there can be no real conclusion about the patterns of bird distribution so carefully documented by observers and regional editors. On the other hand, if you peruse the bird distribution maps in some of those incredible new field guides, or the pages of states' and provinces' journals and monographs, or the many books emerging on particular regions or particular families of birds, you'll notice that the finest references and field materials use *this journal's regional reports* as part of the bedrock data on which their books or articles are built.

But there is a common frustration among those who assemble these materials and those who wish to research a particular species: the regional reports themselves cannot be easily searched for data. It is one goal of the editors of this journal to develop an electronic database of the regional reports, so that anyone with an interest in the history of a particular species or suite of species might easily perform the research without resorting to hundreds of

hours in a library. We will of course keep the readership and ornithological community abreast of our efforts in this direction.

Literature cited

- Able, K. P. 1980. The Changing Seasons. *American Birds* 34: 249–252.
- Bell, G. P., F. J. S. Phelan, and R. C. P. Wypkema. 1979. The owl invasion of Amherst Island, Ontario, January–April 1979: a report from the owl capital of the world in the parliament of winter. *American Birds* 33: 245–246.
- Buckley, P. A. 1973. The Changing Seasons. *American Birds* 27: 578–585.
- Granlund, J. 1992. The Winter Season: Western Great Lakes Region. *American Birds* 46: 266–270.
- Heil, R. S. 1981. An avian fallout and the first Massachusetts records for Black-chinned Hummingbird and Lucy's Warbler. *American Birds* 35: 139–141.
- Kaufman, K. 1990. The Changing Seasons. *American Birds* 44: 224–227.
- . 1992. The Changing Seasons. *American Birds* 46: 224–227.
- . 1993. The Changing Seasons. *American Birds* 47: 230–232.
- . 1998. The Changing Seasons. *Field Notes* 52: 158–159.
- Knapton, R. K. 1982. The Changing Seasons. *American Birds* 36: 261–271.
- Leukering, T. 2001. The Changing Seasons. *North American Birds* 55: 13–19.
- Muth, D. P. 1999. The Changing Seasons. *North American Birds* 53: 132–134.
- Patten, M. A. 2000. The Changing Seasons: Warm weather and cross-continental wonders. *North American Birds* 54: 146–148.
- . 1998. The Changing Seasons. *North American Birds* 52: 14–18.
- Paxton, R. O. 1973. The Changing Seasons. *American Birds* 28: 604–609.
- Petersen, W. R., and R. A. Forster. 1981. The Changing Seasons. *American Birds* 35: 269–278.
- Robertson, W. B., Jr. 1975. The Changing Seasons. *American Birds* 29: 660–666.
- Smith, K. 1977. The Changing Seasons. *American Birds* 31: 292–303.
- Shuford, D., and D. DeSante. 1979. The Changing Seasons: Winter 1978–79...the year of the Great Gray Owl. *American Birds* 33: 255–262.
- Vickery, P., and R. P. Yunick. 1979. The 1978–1979 Great Gray Owl incursion across northeastern North America. *American Birds* 33: 242–244.
- Yank, R., and Y. Aubry. 1992. The Winter Season: Québec region. *American Birds* 46: 233–235.

STANDARD ABBREVIATIONS USED IN THE REGIONAL REPORTS

Abbreviations used in place names

In most regions, place names given in *italic* type are parishes or counties. Other abbreviations:

A.F.B.	Air Force Base
B.B.S.	Breeding Bird Survey
C.B.C.	Christmas Bird Count
Cr.	Creek
Ft.	Fort
Hwy	Highway
I.	Island or Isle
Is.	Islands or Isles
Jct.	Junction
km	kilometer(s)
L.	Lake
mi	mile (s)
Mt.	Mountain or Mount
Mts.	Mountains
N.F.	National Forest
N.M.	National Monument
N.P.	National Park
N.W.R.	National Wildlife Refuge
P.P.	Provincial Park
Pen.	Peninsula
Pt.	Point (not Port)
R.	River
Ref.	Refuge
Res.	Reservoir (not Reservation)
S.P.	State Park
Twp.	Township
W.M.A.	Wildlife Management Area
W.T.P.	(Waste) Water Treatment Pond(s) or Plant

Other abbreviations and symbols referring to birds:

ad. (ads.)	adult(s)
imm. (imms.)	immature(s)
juv. (juvs.)	juvenile; juvenile(s)
ph.	photographed
sp. (spp.)	species (plural)
subad. (subads.)	subadult(s)
tape	audio tape-recorded
v.t.	videotaped
†	written details were submitted for a sighting
*	a specimen was collected

