The majority of the birds that we see in New Hampshire are migrants, here only for their relatively short breeding seasons and off to warmer climes when the days shorten in fall. A handful of species are effectively permanent residents: either non-migratory birds (like most woodpeckers) or short-distance migrants, with local populations supplemented by individuals from farther north (chickadees, juncos). A few species are ONLY here in the winter; the Granite State is their idea of a tropical vacation.
Common redpolls are New Hampshire’s most regular “irruptive” winter migrant. If trends from the past twenty years continue (see graph on page 10), then it is likely we will see fewer redpolls at our feeders this winter.
The most familiar of these is probably the American tree sparrow, which breeds in the Arctic tundra. But an additional class of birds straddles the line between winter visitors and short-distance migrants, and is a little less predictable than most. These are called “irruptives,” and no, this has nothing to do with volcanos.

**WINTER WANDERERS**

In the bird world, an irruption is a type of migratory movement that is somewhat irregular in time and space, and usually closely tied to food supplies. For most migratory species, the entire population moves each year, at the same general time, and to the same wintering areas, whereas with irruptives, only part of the population may move, not every year, and usually not to the same place. These species are, for all practical purposes, nomads. They fall into three main categories with respect to their preferred food: seeds, fruit and small mammals. In the boreal and Arctic parts of North America, these food supplies are highly variable, often following multi-year cycles, and in years of low abundance, the birds that rely on them are forced to wander elsewhere in search of sustenance.

The most famous irruptives are the “winter finches,” including species like crossbills, redpolls and grosbeaks. Each is responding to a different seed source, and so each has a different fascinating story to tell. The most regular of these is the common redpoll, which feeds primarily on birch seeds. Birch has a two-year cycle, meaning that every other year there aren’t a lot of birch seeds in Canada. If there’s nothing to eat, the redpolls move - at least until they find a nice patch of birches bearing seed. Sometimes they move south, sometimes east, and sometimes west, and the combination of where they're coming from and where the good birches are determines whether we’ll have a good “redpoll year” here in New Hampshire. Although the numbers vary, there’s a very good chance that we’ll experience a redpoll invasion every two years, and this pattern has held for decades (see graph below).

On rare occasions, we’ll see a small “echo” irruption in the year following a major one, and this sometimes resets the cycle a little, resulting in a three-year gap between peaks. For the especially diligent observer, our big redpoll years bring a good chance of finding the much rarer hoary redpoll. Larger and paler than the common redpoll, this species is only recorded in the single digits, when it is recorded at all. Pine siskins and American goldfinches are close relatives of redpolls, and also tend to follow two-year cycles, although for different reasons.

**FLUCTUATING FLOCKS**

These graphs show the biennial irruptions of the common redpoll and the ongoing decline of evening grosbeak appearances in New Hampshire. Shown here are the total numbers of birds recorded during NH Audubon’s annual Backyard Winter Bird Survey.
A new irruptive joined the cast in New England during the 1940s. This was the evening grosbeak, and most evidence suggests that it increased in the early 1900s in response to spruce budworm outbreaks in central Canada. Grosbeaks feed the budworm caterpillars to their young, and populations increase when there are lots of them around. As the birds expanded east, they found the Northeast to their liking, and for four decades these colorful finches were a mainstay at winter feeders throughout New England. But when the budworm began to decline, the birds followed suit, and this formerly abundant winter bird is now less prevalent (see graph on page 10). Ornithologists’ eyes are currently turned toward Quebec, where another budworm outbreak is under way. Time will tell if this results in the return of evening grosbeaks to Granite State feeders, or if there are other factors influencing its populations.

A SPECIALIZED FINCH

The quintessential irruptives are without doubt the crossbills. There are two species in North America, the white-winged and red. As their name indicates, these birds are unique in having a beak in which the upper and lower mandibles do not meet perfectly, resulting in one crossing over the side of the other. This is an adaptation that allows the crossbill to more easily extract seeds from partially open cones. As such, they are the most specialized North American finches, since they are less able to eat other food such as fruit or small seeds. This, in turn, leads to some of the most epic irruptive movements of any birds on the continent.

The white-winged crossbill feeds primarily on spruce seeds and wanders extensively across the continent. Large irruptions into New England are very unpredictable, with the last one occurring in 2008. Based on observations made in the summer and early fall of 2015, the winter of 2015-16 may see at least a minor incursion into the Granite State. Fun side fact: at some point in the distant evolutionary past, this species managed to make it to the Caribbean, and on the island of Hispaniola found a reliable source of conifer seeds in the form of Caribbean pines. Over the ensuing millennia, they evolved into a
A
though winter can be a slow time for birding, the possibility of irruptives does add a bit of excitement to the short cold days. There are several ways for birders to help collect data on these populations, whether as a hard-core field observer braving the frigid winds of February, or from the comfort of your dining room table, newspaper and hot chocolate at your side.

The longest-running of these programs is the National Audubon Society’s Christmas Bird Count, which occurs each year over a three-week period in December. Observers attempt to count as many birds as possible within 15-mile diameter circles, and can participate in the field or at feeders. New Hampshire has 23 such circles, and details on each are provided annually by NH Audubon. You can also check in with the National Audubon Society at audubon.org/conservation/science/christmas-bird-count.

Starting in 1967, NH Audubon enlisted volunteers to count cardinals, titmice and mockingbirds at their feeders in an effort to track those species’ increasing populations. In 1987, the program expanded to include all species and became the Backyard Winter Bird Survey. The survey occurs over the second full weekend in February each year (February 14-15, 2016). Learn more at nhbirdrecords.org/bird-conservation/bwbs/backyard-winter-bird-survey.

Two similar feeder-based projects are run by the Cornell Laboratory of Ornithology: Project FeederWatch and the Great Backyard Bird Count. Visit feederwatch.org and gbbc.birdcount.org.

Finally, eBird is a global database of bird sightings that is increasingly used for tracking populations and implementing bird conservation. NH Audubon uses eBird for collecting data on all species, and birders of all abilities are encouraged to use it: ebird.org/content/nh.

HELP TRACK NEW HAMPSHIRE’S IRRUPTIVE BIRDS

unique species – the Hispaniolan crossbill – that lives only in the highlands of Haiti and the Dominican Republic.

The same evolutionary pressures that led to the Hispaniolan crossbill resulted in an extensive diversification in the red crossbill, of which there are ten “call types” (probably separate species), each specialized on a different type of conifer, usually pines. Telling these incipient species apart is only possible through bill measurements or careful analysis of their call notes, and sometimes a single flock may contain multiple types. In the Northeast, red crossbills have been documented as originating from as far away as the Pacific Northwest, although others may come from as close as eastern Canada. After some irruptions, a few will stick around to breed – even starting in winter if there are enough cones available to provide food for their young.

FRUGIVORES GALORE

Not all winter finches are responding to seed crops. The pine grosbeak is another 2-3 year species, and in its case, the major drivers of irruptions are mountain ash and other fruiting trees (although it will also eat seeds). Pine grosbeaks are remarkably tame; when they show up in New Hampshire, they are easily approachable as they feed at eye level in ornamental cherry and crabapple trees. These same fruit trees often attract another irruptive frugivore (fruit eater), the aptly named Bohemian waxwing. In something of a parallel story to that of the evening grosbeak, Bohemian waxwings were rare in the Northeast until the 1980s, but since then have been more reliable, albeit only every two to three years.

So far we’ve focused on the “classic” irruptives, the finches and waxwings that show up at somewhat predictable intervals, and which are easily detected because they don’t breed locally. But like the American goldfinch, there are a few more “stealth” irruptives that aren’t as obvious unless you pay close attention to your local birds. Included in this group are two species that are very familiar to New Hampshire feeder watchers: the blue jay and red-breasted nuthatch. Both can stage significant migratory movements when their preferred food supplies of acorns and spruce seeds, respectively, are scarce in the north. In those winters, we are apt to see more than usual in our yards. Even the familiar black-capped chickadee does this to some extent, and if you watch carefully in some Octobers, you’ll notice unusually large numbers apparently migrating.
ARCTIC RAPTORS

Last but not least, we’ll turn our attention to a group of birds that can’t be bothered with prey as small and immobile as seeds and fruit. These are the predators of the far north, the owls and hawks that prey on birds and small mammals. Most famous are the owls – snowy, great gray and northern hawk – which are guaranteed to attract paparazzi wherever and whenever they occur. These owls are responding to populations of voles and lemmings, and can stage an irruption in times of both abundance and scarcity. Many New Hampshire residents may recall the winter of 2013-14, when snowy owls invaded in near record numbers (some even made it to Florida and Bermuda). That irruption was dominated by young birds, and reflected an exceptionally productive breeding season on the tundra. Lemmings were abundant in the summer of 2013, and nesting owls were able to rear large numbers of young. Faced with winter and more difficult hunting, most of these young owls had little choice than to wander south, where they entertained birders and passers-by for months, even causing traffic jams on coastal roads. Researchers in Massachusetts captured over 100 “snowies” at Logan Airport alone.

By the time you read this article, we’ll likely have a pretty good idea of which irruptives are around in the winter of 2015-16. My personal prediction is that it will be a fairly quiet year, with the likely exceptions of pine grosbeaks, Bohemian waxwings, a few crossbills, and maybe an “echo” of last winter’s redpoll flight. One species that appears unlikely is our State Bird – the purple finch – which is also an irruptive, but has been scarce the last few winters. Next winter, the cast will change completely in the constant shuffling of bird populations across the boreal forest – and that’s what keeps birders hopeful in the short cold days of northern New England.

Pam Hunt is a biologist at NH Audubon, where she works closely with Fish and Game on the conservation of the state’s nongame birds.
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