



# The Dynamics of Bird Feeding

PLUSES AND MINUSES OF FEEDING WILD BIRDS



PUBLISHED BY

**National Bird-  
Feeding Society**

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# The Dynamics of Bird Feeding

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## Focus of Three-year Study: How Feeding Affects the Birds

Looking through the many books and articles on wild bird feeding, Margaret Clark Brittingham noticed that — while there is plenty of information available on what and how to feed — there was not much about how feeding actually affects the birds.

She was surprised that a practice so widespread — more than 70 million North Americans put out over a billion pounds of bird feed each year — had not been evaluated scientifically.

So began a three-year series of overlapping studies in south-central Wisconsin to measure the pluses and minuses of feeding wild birds during the winter. A related study followed in Pennsylvania, along with a survey, plus a look at blue jays.

The initial answer to “Is winter bird feeding beneficial?” seemed obvious. One of the reasons people feed birds is to help them survive winter.

But some questions arose. Flocks of birds gathering at feeders attract the attention of cats and hawks. Also, birds congregating in small areas might be at higher risk of disease. And they might become so dependent on feeders that they cannot find sufficient food when feeders are not available.

After a lot of looking, two remote sites were found where no bird feeders were present. Three other, similarly rural locations were selected where feeding stations were set up.

Original plans were to study some 15 different species, but problems turned up with virtually all of them except chickadees.

The black-capped chickadee is one of the most common feeder visitors. It is one of the smallest species to winter in northern areas. And it has such high energy demands that it must feed almost continuously to survive a Wisconsin winter.

Thus, if any species benefits from supplemental feeding, the chickadee would.

Over the course of the three winters ending in April of 1985, some 576 chickadees were caught in mist nets and tri-color-leg-banded for later identification.

“Identifying” was not as easy as it sounds. Observers had to tolerate the cold, be patient and not color-blind, and be able to distinguish between right and left legs and top and bottom when a chickadee was foraging upside down in a treetop. Each of the five sites was monitored at least weekly, and occasional all-day feeder watches were conducted. Since chickadees take one seed at a time, the total eaten by each banded bird could be counted.

Also, because the nutritional value of black oil sunflower seeds is known, how many each bird would have to eat to satisfy its daily energy requirements could be calculated at various temperatures. For example, at 0° fahrenheit, this would be more than 250 seeds a day — some 60% of a chickadee’s weight.

Thus set up and put into motion with the help of two full-time field assistants and several volunteers, the studies went forward to find some answers to such questions as:

- What percentage of their food were chickadees actually obtaining from the feeders?
- Did this supplemental quantity help them survive the winter?
- How does the value of feeder availability compare between chickadees in Wisconsin and those in Pennsylvania, near the southern edge of their range?
- To what extent did supplemental feeders help the birds in late winter and spring, when natural feed is least abundant?
- Can hard-core feeder-using chickadees survive going “cold turkey” by having the feeders removed?
- Do many birds die from diseases contracted at feeders?
- And, by following 2,373 blue jays banded at a feeder in Madison, Wisc., from 1953 until 1976 by the late Margaret B. Hickey, what can be learned about birds’ survival rates, longevity and causes of mortality?

## How Much Help Are Bird Feeders to Chickadees' Winter Survival?

Much has been written about feeding wild birds, but most of it has to do with types of feeders and seeds, food preferences and the like.

Little has been said about how birds use supplemental food or its relative importance during cold, snowy northern winters.

With a third of the citizenry feeding birds during the winter, such a widespread practice that potentially affects wild birds on a large scale needed to be evaluated.



**The friendly black-capped chickadee flies to a feeder, grabs a seed and flies off again to a nearby branch or other perch to peck open and eat the tidbit. Black oil sunflower seeds are a favorite.**

### About the Study

Chickadees — the black-capped variety in the North, Carolina further south — is one of our most common feeder birds. They have such high energy demands that their survival is dependent on obtaining sufficient food every day.

Special one-side-only hopper feeders were set up in the center of two rural, wooded areas in Wisconsin. They were kept full of black oil sunflower seeds from October into May. One site was used two winters, but the other was only available one.

There were no other feeders within 2 kilometers of either site, a distance greater than most chickadees travel during the winter.

Some 348 black-capped chickadees were captured near the feeders in mist nets and

banded on the two sites over the two-year study period.

Average age was determined by feather wear for 77 chickadees, and the sex of 62 birds was determined by behavior the spring after banding.

### About Feeder Use

During each of the two winters, the feeders were watched on 15 days at the two sites. Between 32 and 115 banded (and up to 10% unbanded the first winter) birds visited the feeders each day.

Records were kept of the first arrival time for each banded bird at a feeder each day and the latest time it was seen there. Since chickadees typically take one seed at a time and carry it away to open and eat, it was possible to count seeds taken and presumably consumed by individual birds.

The daily energy needs of chickadees at various temperatures was known from another study, and the energy value of an individual seed was calculated. Since survival rates at the study sites were about 95%, it appeared the birds were getting enough to eat.

And by “checking the neighborhood,” researchers were able to locate the approximate home range of 81 birds. This was necessary to compare feeder use with the distance they had to travel.

### About the Findings

About 83 of the 348 banded chickadees showed up at a feeder every day, taking on average about 42 seeds. They only received an average of 21% (with a range of 14% to 29%) of their daily energy requirements from the feeder.

Chickadees generally first arrived a little more than three hours after sunrise and were last seen a little more than two hours before sunset.

They traveled on average about four-tenths of a kilometer from the center of their home range. And as might be expected, the further they “lived” from the feeder, the less they used it.

Feeders were used less intensively in spring than in either fall or winter, although the number visiting the feeder did not change with either the season or the temperature.

### About the Conclusions

Chickadees' natural food supply in winter is widely dispersed, and they tend to sample the available "food patches" continuously to the point of leaving available food. After all, winter snow and ice combined with many feeding birds could mean that a source of food might disappear at any moment.

Also, since this study offered only black oil sunflower seed, the birds may have needed or chosen a more varied diet.

Within flocks, males typically are dominant over females and, within each sex, adults over juveniles. But with food abundant at the feeders, the principal dominance was site-related: those closest to their home range were dominant over those who traveled further.

As for why chickadees did not use feeders more as the temperature declined, researchers could note only that the birds conserved energy by remaining motionless for long periods of time, returning to their roosts earlier and leaving later.

Researchers said that in suburban areas, where less "natural" food is available, the need for supplemental feeding may be greater. And also that, where feeders are dispersed over wide areas, the use may be much higher than in the rural study.

In conclusion, they felt that "feeders can be an important wildlife management tool for maintaining populations of feeder users in suburban areas. In addition, feeders increase positive human-wildlife interactions.

"Although chickadees depend primarily on natural food sources, feeders provide an important supplement to their natural diet."

## Study Shows Value of Feeders In Blue Jays' Survival

Long-term studies of backyard birds are rare. But when they exist, much can be learned about survival rates, longevity and abundance of a particular species by comparing trends with year- to-year fluctuations.

While blue jays are common throughout eastern North America, relatively little is known about their population dynamics.

### About the Study

From 1953 until her death in 1976, Margaret B. Hickey banded and monitored a total of 2,373 blue jays around feeders in her suburban backyard in Madison, Wisconsin.

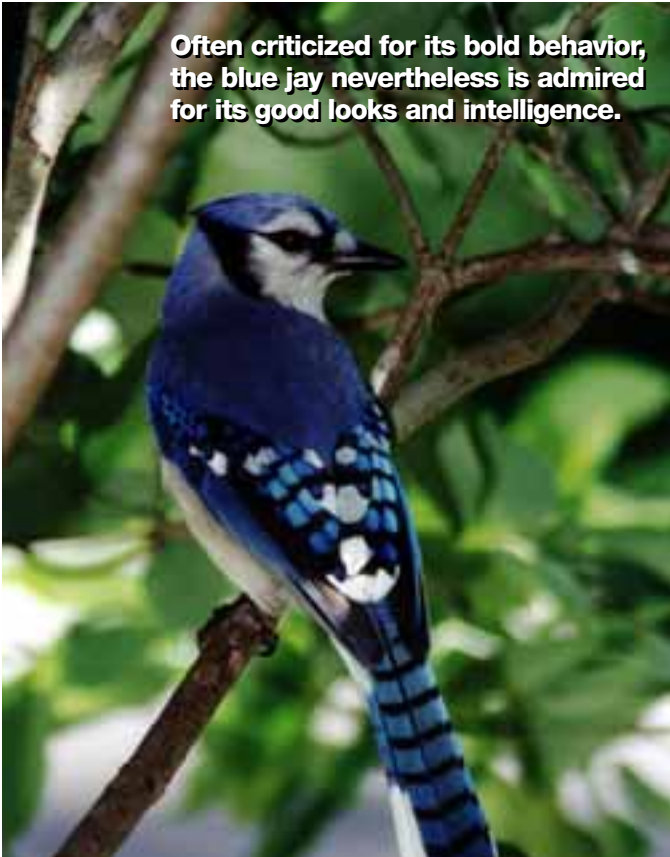
She banded blue jays year-round, marking most of them within a day or two of their arrival. She estimated that 90% of the blue jays that frequented the yard were marked at all times.

Using the Hickey records, Margaret Clark Brittingham, then with Department of Wildlife



**Blue jays love peanuts but will eat most wild bird seeds, often "caching" them for later feeding.**

Ecology at the University of Wisconsin, Madison, studied the data relative to jays' population dynamics.



Often criticized for its bold behavior, the blue jay nevertheless is admired for its good looks and intelligence.

### **About the Findings**

Since 774 banded birds were not seen after the first month (they may have been migrating through), the study was based on the remaining 1,599 birds.

Annual survival rates did not show any significant trend between 1953 and 1975. The average life expectancy for blue jays was calculated at 1.4 years. However, 43 of the banded jays lived to be at least 7 years old, 2 were at least 13 and 2 lived at least 14 years. Because many birds were banded as adults, and many still were alive when the study ended, these ages really are minimums.

It is not known what eventually became of most of the birds. Only 111 banded blue jays were recovered dead and reported.

### **Songbird Hazards**

The reported cases do, however, point to the hazards facing songbirds in suburban areas. For 68, the cause of death was not known. Cars killed 11, disease or injury 7. Cats killed 5, flying into windows 5, and another 5 were intentionally shot. The remaining 10 died from drowning, electrocution, or being caught in a trap, fence or string.

The total number of blue jays present in the Hickey yard showed a significant increasing trend between 1953 and 1975. In fact, breeding censuses have reported increased numbers of blue jays in the midwest and northeast.

Despite what might have been expected, there was no correlation in this study between the numbers of blue jays and the year-to-year abundance of acorns. Of course, it must be noted that all of these jays were trapped at a feeder.

The fewest blue jays were present during winter. Numbers increased during spring migration and peaked in the summer, when young birds appeared. Numbers dropped after the fall migration.

### **About the Conclusions**

While there was no clear reason for the growing numbers of blue jays, the most likely cause is regional, rather than local, changes in survival rates prior to and/or during the study.

Most blue jays are sedentary but will migrate during years of poor food supplies. Thus changes in migratory behavior could occur rapidly if available food favored residents over migrants.

Suburban development and more people feeding birds during the winter may be leading to higher winter survival rates.

If this is the case, the study says that bird feeders are an important source of food to wintering blue jays and that those birds have higher survival rates than others without access to feeders.

Supplemental feeding also could produce reduced migration, although the study did not detect a decline in migrating jays. Similarly the study did not find that any significant changes occurred in reproductive rates, another potential benefit of supplemental backyard bird feeding.

Finally, and apart from the study, it has been observed that growing numbers of blue jays are a mixed blessing. While they are beautiful birds, they are loud, raucous, bullying and predators of the nests of many smaller, perhaps more desirable and sometimes declining, songbirds.

## Feeding Birds in Winter: Help or Harm?

During Northern winters, lack of food is believed to be one of the main factors affecting birds' survival rates. It thereby limits the populations of some resident species.

Circumstantial evidence supports this belief, but few controlled experiments that manipulate the food supply and measure the effect on survival rates have been performed.

### About the Study

To look deeper into this issue, five sizable study sites were located in rural Wisconsin. Supplemental food in the form of black oil sunflower was made available at one central location on three of the sites, none on the other two.

The study, performed over the course of three successive winters, revolved around black-capped chickadees. They do not fly south for the winter. And their energy needs are so intense that they cannot live much more than a day during winter without food.

Since the study sites were at least two kilometers apart, a distance greater than chickadees normally travel in search of food, those on the control sites did not have access to feeders. In fact, over the three winters, only two chickadees were found to have traveled that far to a feeder.

During the study, some 576 chickadees were captured in mist nets and leg banded in unique colors so that individuals could be identified. Each was weighed and, over a period of field observation, many had their sex and approximate age determined.

### About the Findings

Four questions lay at the heart of the study:

1. Do feeders increase overwinter survival rates? The answer was "yes." Chickadees with access to supplemental food had much higher total winter survival rates, by 69% to 37%. In addition, their standardized weights were .13 grams more.
2. When during the winter are feeders most valuable? In general, chickadees' winter food is produced in the summer and early fall and

declines throughout the winter. It would seem reasonable to expect that in late winter months, when the food has been depleted and daylight for foraging is at a minimum, feeders would have the most positive effect on survival rates. Such was not necessarily the case.

3. Then, are feeders most effective during periods of critically low temperatures? The answer is, "yes;" this is the key. Because of its small body size and high metabolic rate, during the winter a chickadee must maximize its energy intake during the day and minimize its energy expenditures at night. Even then, a chickadee may not be able to obtain enough energy from dispersed natural sources to survive very cold nights.
4. Do feeders increase survival rates of some chickadees but not all? This refers to the winter dominance hierarchies: males over females, adults over juveniles. But on study sites with feeders, less dominance was practiced and there were, as a result, no differences in survival rates.

### About the Conclusions

Monthly winter survival rates varied significantly between: sites with and without feeders; months with moderate and severe ( $-18^{\circ}\text{C}$ .) temperatures; and the interaction of the presence of feeders and severe temperatures.

Birds with access to feeders had higher survival rates all winter long. During the summer, when no feeders were available, there were no survival rate differences among the five sites.

However, it appears that natural winter food supplies are sufficient to support chickadees during average winter weather.

Birds with access to feeders maintained higher weights and were able to replace depleted energy reserves with minimal foraging. During periods of extreme cold, the ability to obtain a large amount of energy in a short period of time and with minimum foraging may be critical to their survival.

The study concluded that the greatest variation in monthly survival rates between chickadees with and without access to feeders occurred during periods of at least five days when the temperature dropped below  $18^{\circ}\text{C}$ .

## Study: the Colder the Weather the More Important the Feeder

Having determined that bird feeders help chickadees survive winter in Wisconsin; the Brittingham team performed a similar study in central Pennsylvania, near the southern edge of the birds' range.

Purpose was to see if supplemental feeding was as important to chickadees' survival in areas where winter temperatures are milder.

They are an ideal subject because they have such high energy demands that they need to eat almost constantly to survive winter.

### About the Study

Some 321 chickadees were color-banded over two winters in three different habitats: a mature oak-maple-pine forest without feeders; a forest with feeders, and suburban. The seven sites were at least a mile apart — further than chickadees tend to travel in search of food — and the forest locations were more than a mile from any home.

Three suburban locations were studied., all older neighborhoods with mature trees and bird feeders scattered throughout.

During the two winters of the study, the lowest the mean temperature fell for at least 4 straight days was about 20° F. This contrasts with 5 consecutive days of mean temperatures at around 0° F in the Wisconsin study.

As in the latter, the Pennsylvania study sought to test whether chickadees with access to feeders had higher survival rates than those without. Researchers also wanted to isolate other aspects of the suburbs — cats, cars, windows etc. — to see if they influenced winter survival rates.

### About the Findings

Small birds maintain fat at a level that allows them to survive a night of “expected” or average weather conditions. Thus researchers separated the months studied into those above and those below (about 20° F for 4 or more straight days) average.

Due to the relatively mild Pennsylvania winter, at least during the study period, very little difference was found in survival rates.

However, survival rates of chickadees without access to supplemental food was lower than for those with feeders nearby, whether in the forest or the suburbs. The biggest differences were in, surprisingly, October and March.

It was concluded that this was due to emigration, not death. Concentrated movements of chickadees occur in the fall, when the juveniles disperse, and spring, when birds of low status begin to wander. Chickadees near feeders settled earlier in the fall and moved out later in the spring.

### About the Conclusions

In areas where winter brings extended periods of cold temperatures, backyard bird feeding stations are seen as being the critical difference in many a chickadee's overnight survival.

In warmer areas, supplemental feeders still help but do not appear to be essential. However, the presence of feeders does seem to cause chickadees to settle longer into such friendly confines.

While the suburban hazards to birds might lead to an expectation that chickadees in the forest that have feeders available should have a higher survival rate, the study found no difference.

Researchers could only guess at the reasons, such as native predators, perhaps hawks, canceling out the effects of cats, cars etc. Overall they concluded: “We attributed the positive effect of suburbanization on survival rates to the numerous bird feeders present in the suburban habitat.”

And: “We did not find any relationship between cold temperatures and winter survival rates of black-capped chickadees in Pennsylvania. During an unusually cold winter, we might see a relationship between survival rates, supplemental food and temperatures.”



## Do Bird Feeders Create Dependency?

Feeding wild birds, especially during Northern winters, generally is assumed to be beneficial. Certainly the rewards are abundant for the 52 million people that the U.S. Fish & Wildlife Service says feed birds in this country.

Could there be a downside to this enjoyable hobby? If birds become overly dependent on feeders, would they fail to develop, or lose, the ability to forage efficiently on naturally occurring food?

Studies by the team led by Margaret Clark Brittingham, previously summarized in this series, have shown the value of supplemental feeders to birds, chickadees in particular.

Chickadees are one of the smallest birds that remain in the North during winter. Their small body size and high metabolic rate create an intense need for energy.

They therefore spend much of the daylight hours foraging for food. At night, they roost in protected locations and become hypothermic. Even so, chickadees may lose 10% of their body weight overnight. They must find food to survive.

### About the Study

After two winters of comparing survival rates of chickadees with access to bird feeders to those without, the Brittingham team removed the sunflower feeder from the study site. It had been there for the preceding 25 winters.

The object was to compare the survival rate of this group of potentially feeder-dependent chickadees (49 birds that had been banded at the feeder during preceding winters) with 35 from the control site where a feeder never had been present.

The two sites were more than a mile apart, further than chickadees usually travel in search of food. And both groups experienced the same weather during the October–April study: average low temperatures below freezing, with temperatures in two months frequently below zero F. and occasionally below -20°F.

### About the Findings

In terms of survival rates, which were about 85%, there was no difference between the two groups of chickadees. (The other 15% were presumed to have died, since chickadees remain in the same area throughout a winter). Birds that had used feeders in the past were no less able to survive on a natural food supply. This is not surprising. During the preceding two winters, at the site where there was a sunflower feeder, chickadees still obtained some 79% of their daily rations from natural sources.

As anyone knows who has watched a chickadee, they are true opportunists. They feed on a wide range of foods and use a variety of foraging techniques. In winter, they will search out insect eggs and larvae, mites and other arthropods, seeds, carcass remains and all sorts of other available energy sources.

### About the Conclusions

Both the control and the experimental sites were in relatively undisturbed rural locations in Wisconsin composed primarily of deciduous woods. Closer to town, where natural food may be less abundant, birds could be more dependent on feeders.

However, with so many people feeding wild birds, dependency on any one feeder site probably still would be low.

Also, chickadees are a resident species. It is possible that migrants could become more dependent on feeders since they would not be as familiar with the winter area.

The study also did not see what the effect would be if a feeder were suddenly removed or left empty in the middle of winter. However, birds are used to food sources disappearing in winter, due to snow, ice or foraging by other birds.

Chickadees as a result seem to track a number of available food sources constantly, even when a full feeder is nearby. While people may consider their feeders to be very predictable, birds probably view them as just another food source.

## Birds that Flock Together Spread Germs Together

### People get sick. And so do birds.

When people crowd together, infections are spread more easily. The same is true for the birds, which usually only jam into tight quarters in one place — at backyard feeders.

These concentrations also may attract both domestic and wild predators and may increase the likelihood of birds flying into windows as well.

Of course, supplemental feeding — especially in winter and spring — provides birds with high-energy food at a time when natural food supplies are low and energy demands are high.

And there are measures that people who feed birds in their backyards can take to reduce the potential for spreading of disease at their feeders to nearly zero. The key: keeping things clean.

### About the Study

A questionnaire was mailed to 1,145 members of the Wisconsin Society of Ornithology, located throughout the state. Purpose was to see how many birds were dying around feeders from disease and unknown causes, and under what circumstances.

Researchers wanted to see if there were any correlations between occurrences of mortality and a range of factors: number and species of birds using the feeder; type of feeder, and locale.

More than half the questionnaires (624) were returned. Since one in three Wisconsin households feed wild birds, researchers concluded they heard from most members that engage in the hobby.

### About the Findings

Some 16% experienced bird mortality due to disease or an unknown cause, and two-thirds of those had had only one incident while they had been feeding birds, which averaged about 12 years per household.

A total of 335 such deaths was reported.



**Although commonly are known as house or English sparrows, these birds actually are members of the weaverbird family. They were introduced in North America in the mid-nineteenth century.**

Researchers presumed this was a low estimate, since many birds that die are not detected and others, in a weakened condition, are taken by predators.

Through calculations and comparisons, several factors that seemed to impact bird mortality were identified:

- Both the number of species and of individuals were higher at feeder sites that experienced a bird killed by disease or unknown causes.
- Fewer incidents were reported from urban areas than rural, where the most species and largest numbers of feeding birds were observed.
- Five species were more often present at feeder sites that experienced mortality: mourning dove; European starling; house sparrow; American goldfinch, and American tree sparrow.
- House sparrows were seven times more likely to be found dead or dying than any other species (this study preceded the spread of house finches into Wisconsin).
- Only one species — the tufted titmouse — was more often present at feeders where less mortality occurred, presumably because they primarily visit feeder sites in wooded areas where the above five species are relatively rare.
- Deaths occurred most frequently where platform feeders were in use.

## About the Conclusions

Although the research team could not prove that the deaths resulted from disease, they pretty much ruled out starvation and hypothermia since the dead and dying birds were found near feeders.

Most of the species experiencing mortality are gregarious during the winter, roosting and feeding in large flocks. This may increase the probability of the spreading of disease.

Because platform feeders allow birds to stand in the food, seeds are more likely to become contaminated with fecal matter. But regardless of the feeder type, seeds fall to the ground, may become contaminated and then be eaten by ground-feeding birds.

Particularly cold temperatures may make matters worse since more birds may be at feeders. Plus, the risk of fatal hypothermia increases.

Researchers passed along these

recommendations to people who feed wild birds in their backyards:

- Keep feeders clean, disinfecting with a weak bleach solution if necessary.
- Do not feed directly on the ground.
- Store seed in a dry place, and do not use it if it becomes moldy.
- If mourning doves or pigeons are using the feeder, do not feed in the summer to reduce the risk of trichomoniasis.
- If a bird dies, put on gloves, pick up the carcass, put it in a plastic bag and dispose of it. Clean and disinfect feeders, and move them to a new location. This reduces chances of infection from fecal contamination on the ground and vegetation. Do not stop feeding, as infected individuals might then just move to a new feeder and introduce disease there.
- Regularly clean up and dispose of seeds spilled on the ground.

## House Finches Threatened by New Avian Eye Disease

If you find a house finch at your bird feeder with scabby, swollen, crusty, watery or infected-looking eyes, it probably has contracted a new condition known as house finch conjunctivitis.

First noticed during the winter of 1993-94, the disease has spread throughout the eastern U.S. and now is seen more often in the Midwest. (We have seen only one at headquarters.) It affects mainly house finches, slender little brown birds. The male has a red breast with fainter red on the back side.

Eye inflammation and disease can be caused by many different bacteria, fungi, viruses and parasites. But lab tests have confirmed that this conjunctivitis outbreak is caused by a well-known bacterium, *Mycoplasma gallisepticum*.

### About the Disease

The disease usually infects one eye first, then spreads to the other. Sick finches may appear



**House finches, native to western states, were introduced in the New York City area in 1940. At that time pet dealers, being arrested for illegally selling them as “Hollywood Finches,” released the birds from captivity. Their range is still expanding.**

mangy-looking, weak, lethargic or disoriented. They often are alone at feeders.

Finches with partial vision loss may fly into feeders or windows. Severely ill birds may not fly at all, remaining on the ground pecking at dropped seeds.

While symptoms have been reported among other common feeder birds, studies at the Cornell Laboratory of Ornithology concluded that other songbirds rarely are affected.

Since this is an exclusively avian disease, humans and other mammals will not catch conjunctivitis from contact with sick birds. This is good news for predatory house cats.

Researchers do not yet know how the disease is spread among finches, making it difficult to try to stop it. The infection formerly was confined to domestic birds, such as chickens and turkeys.

In those instances, the disease can be spread through respiratory droplets and in their feces, or to their young during egg formation. If that method of transmission also applies to finches, the implications could be serious since the disease could persist through generations.

### **About Our Role**

Opinions are divided on whether those feeding birds in their backyards should discontinue feeding if infected house finches are present. In that event, the sick birds would travel to other areas, taking the infection with them.

Any dead birds should be either buried or wrapped in plastic bags and placed in the trash. Gloves should be worn since some feeder bird diseases can be transmitted to mammals. Hands and clothes should be thoroughly washed afterward.

The feeder(s) should be taken down, cleaned, disinfected and moved to a new location. Old seeds, hulls and droppings should be swept up. If tube feeders are involved, clean the portals, particularly where birds' eyes might contact the edges.

Taking in and trying to cure infected finches is not recommended. In fact, it is illegal without a state license. And since some birds recover on their own, it is better to concentrate on preventing further spread of the disease.

### **About Our Response**

As mentioned in an earlier article, guidelines exist for reducing the potential spread among feeder birds of not only mycoplasma gallisepticum but other diseases as well:

- Clean your feeders and bird baths regularly with a 10% bleach/water solution and a stiff brush.
- Remove any moldy seed from your feeders, and keep the ground beneath the feeders as clean as possible.
- Provide a number of different feeders to avoid crowding.
- If you must use a platform feeder, only put out a day or two's quantity of seed at a time. Clean this type of feeder often and well.

Like people catching and spreading colds and the flu, birds can and will become ill. It is our responsibility, if we are going to attract them into congested situations by putting up feeders, to minimize any contagious conditions.

The disease is not believed to pose a significant threat to the continued existence of the house finch. Only a tiny percentage of the flock shows any signs of infection.

And its excellent adaptability probably will ensure the continued presence of the house finch at our feeders and in our towns.



**Gloves should be worn when handling sick or dead birds, and hands and clothes should be washed afterward.**

## Cats Represent a Major Threat to Songbird Survival

For centuries, domesticated cats and songbirds have shared an adversarial, hunter-and-hunted relationship. And unfortunately for the latter, a cat's desire to hunt is not suppressed by adequate supplemental food.

Perhaps related to changes in Americans' lifestyles, the number of pet cats is growing.

It doubled to 60 million in the 20 years between 1970 and 1990. These same changes also may have resulted in more cats running free more of the time.

House cats, which exist mainly in cities and suburbs, are only part of the picture. Adding in rural free-ranging cats brings the projected total to more than 100 million.

The combined effect of this many domestic cats is quite impressive. Consider the state of Wisconsin, for example.

### The Toll on Birds

There may be as many as two million rural free-ranging cats in the state, not counting house pets. Recent research suggests that just the rural cats kill an estimated 39 million birds each year. Just in Wisconsin.

Nationwide the toll is in the hundreds of millions of birds, as well as more than a billion small mammals. Plus, urban and suburban cats add to these impressive numbers.

Worldwide, domestic cats may have led to the extinction of more bird species than any cause except habitat destruction.

### Other Problems

When present in large numbers — colonies of more than 20 are not unusual — free-ranging cats can outnumber and compete with native predators. Plus they also may transmit new diseases to wild animals.

Some free-ranging cats carry diseases that are transmitted easily to humans as well, such as rabies and toxoplasmosis. The problem is more than theoretical; densities exceeding 100 free-ranging cats per square mile have been recorded in some parts of rural Wisconsin.

## Cats' Legal Status

The laws and ordinances that relate to domesticated cats vary from place to place. Typically the person who provides a cat's care is legally responsible for its control.

Cats can be live-trapped in many locales and returned to the owner or turned over to authorities if the cat has wandered onto other peoples' property.

Some municipalities have leash laws and may require vaccination and/or neutering of pet cats.

## Conclusions

Researchers offered several suggestions for owners of domesticated cats to help control their effect on wildlife:

- Locate your bird feeders where there is no cover for cats to wait in ambush. Put baffles around any trees with nests.
- Keep only as many pet cats as you can feed and care for. On farms, keep only the minimum number of free-ranging cats — preferably well-fed and neutered females — needed to control rodents.
- If at all possible, for the sake of your cat and of local wildlife, keep your cat indoors. This helps eliminate unwanted reproduction, predation and the spread of disease.
- Remember that collar bells generally are ineffective because, even if the bell rings, it usually is too late to help the prey being stalked. Declawing helps, but many declawed cats still are effective predators.
- Neuter your cats or prevent them from breeding, and encourage others to do likewise. Support either initiating or enforcing laws that require licensing and neutering.
- Do not dispose of unwanted cats by releasing them in rural areas. This enlarges free-ranging cat populations. Cats suffer in unfamiliar surroundings as well.
- Do not feed stray cats, and eliminate sources of food, such as garbage or outdoor pet food dishes, that attract them. Colonies will form and grow to the limits of the food supply, up to dozens of cats.

## On Balance, Is Feeding Birds in Winter Good?



**Pine grosbeaks are only occasional backyard feeder visitors, preferring buds and berries of shrubs found in their northern woodlands habitat. In the winter, mountain ash berries are one of this bird's favorite meals.**

An estimated 50 million North Americans feed the wild birds around their homes, putting out literally tons of seed. Feeding birds on such a large scale is a relatively new phenomenon.

Naturalists were feeding birds a century ago, to attract them in close for study. Through the years since, feeding has been promoted as a way to help wildlife, birds in particular.

But it was not until the 1960s and 1970s — only 30 years ago — that bird feeding grew toward its present scale. Now, with such a massive amount of seed being distributed over such a wide geographic area, the potential effects of this enjoyable hobby are great. Following are areas of concern.

### Physical Condition

Winter bird feeders provide a concentrated source of high-energy food during a time of year when energy requirements are high. As a result, birds with access to feeders may be in better physical condition, particularly during periods of extreme cold or very inclement weather.

Since chickadees that have been studied appeared to be getting only about 25% of their energy requirements from a bird feeder, they presumably obtain other necessary nutrients from the natural food supply.

The bottom-line effect probably varies among species, with the weather and temperature, and with the local abundance of natural food.

### Disease

Because of the close contact between large numbers of wild birds at feeders, one sick individual potentially can infect a number of others. Plus, the build-up of fecal matter may contaminate the food and increase the risk of disease.

Studies have shown that the problems are worst at sites visited by flocks of gregarious birds, such as mourning doves, starlings, house sparrows and finches.

Those who feed birds can help by not using open platform feeders, and cleaning up beneath all feeders regularly.

### Predation, Accidents & Survival Rates

Since bird feeders provide a concentrated and abundant supply of food, more time may be available for birds to watch for predators. On the other hand, the concentration of birds at feeders can attract such predators as hawks and cats.

With feeders usually being placed near windows, there is the risk that birds unwittingly will fly into them, especially when startled. They see the reflection of sky and trees.

Studies in Wisconsin of chickadees found that winter survival of birds with access to feeders was about twice that of those without supplemental feeders available. This correlation was particularly pronounced during very cold periods.

This positive effect of feeders probably is most notable among small birds that may not be able to obtain enough food on extremely cold days. Larger birds not only store more body fat but have lower metabolic rates and thereby need less food.

Among most birds studied, supplemental feeding seems to have no effect on either how many eggs the female lays or how early. Many

species virtually stop visiting feeders in late spring and switch to a high-protein diet of insects.

### **Distribution**

The greatest effect from bird feeding is its influence on where birds are found during the winter. This, of course, is one of the main reasons people feed wild songbirds — attracting birds to specific locations where they can be enjoyed.

Some birds, such as finches, travel in large flocks over wide areas looking for food. They tend to stay as long as food is available. Others, such as chickadees and woodpeckers, maintain territories throughout the year. They stay in their home areas and commute to feeders, increasing the density there but not the total number in the territory.

So while the number of birds present may be greater, the types of species are fewer and different from ones found in more natural areas. Feeders cannot replace natural habitat.

### **Range and Migration**

Cardinals, goldfinches, blue jays and mourning doves are examples of species that have been expanding their ranges northward. Why is not certain, because suburban growth, milder winters and more bird feeding have occurred simultaneously.

Since migratory behavior has evolved over the centuries, it is doubtful that 30 years of bird feeding has made much difference. Birds use change in day length to time migration. In fact, peak migration occurs in late summer or early fall when natural foods still are plentiful.

### **Ecological Balance**

By improving the survival of some species, bird feeding could be changing the competitive interaction among species.

Blue jays, for example, have increased during recent decades. This is of concern since more nest predation by blue jays may be causing a decline of some neotropical migrants.

Also, bird feeding may support large numbers of introduced species, such as

house sparrows and starlings, that could not survive without handouts. They compete with native species such as cavity nesting eastern bluebirds and purple martins.

However, excessive amounts of food exist in the form of garbage, livestock feed and other materials. Feeders are just one part of human-associated foods.

### **The author concludes:**

“The benefits of bird feeding to people are numerous and well-known. It is the primary way the majority of the public interacts with wildlife.

“As our society becomes more urbanized, feeding and observing birds fulfills a need to have some contact with wild animals.

“The sounds and sights of wild birds around our homes is educational, entertaining and brightens a bleak winter landscape.

“Through feeding birds and gaining knowledge about ecology of familiar birds at the feeder, people become more aware of, and more interested in, learning about wildlife.

“As awareness, interest and knowledge increase, people are more likely to participate in, and contribute to, programs that involve and benefit all wildlife.”



**Many people think the male American goldfinches have disappeared from the feeding station in the winter. Look again. Their brilliant canary color gives way every autumn to a drab, yellowish brown.**

## Winter Bird Feeding: Real Worries and Needless Concerns

While a truly amazing number of North Americans feed the wild birds that fly through their yards, they often wonder if on balance they are helping or creating unnatural problems.

As the final segment in this 11-part series on “The Dynamics of Bird Feeding,” two professional biologists offer their answers to some of the most commonly asked questions.

### **“Do I need to feed birds continuously once I start?”**

It certainly does not hurt to keep your feeders filled, but a sense of guilt if you don't is not necessary. Birds search for food constantly, visiting many locations each day.

Most birds feed primarily on natural foods, but these can disappear literally overnight due to snow, ice or consumption by other birds. As a result, birds know not to depend on any single source of food — even a feeder that is always filled.

Birds are creatures of habit, however. If you leave your feeder empty, you probably will be dropped from their foraging route. This may give your neighbors a competitive advantage.

### **“Will birds become overly dependent on feeder food?”**

Researchers found in Wisconsin that chickadees were getting less than 25% of their energy requirements from feeders. In addition, a study in Maryland found that birds depend primarily on natural food supplies.

The Wisconsin study also found that chickadees in a remote area that suddenly had their feeder removed in the middle of the winter found natural food as readily as their cousins who never had had a feeder. The groups' survival rate was the same.

### **“Will feeder birds stop migrating?”**

Since birds migrate ultimately to avoid winter food shortages, an abundant food supply may change their behavior over time. But since migratory behavior has evolved over thousands of years, it is doubtful this has changed during the 30 or so years that people have been feeding birds.

Most birds continue to base their migration on the change in day length. In fact, most migrate in late summer and fall when natural foods may be at their most plentiful for the year.

### **“Does bird feeding give introduced species an advantage?”**

The role bird feeding plays in species competition is not known, primarily because large amounts of human-associated foods (garbage, crops, livestock feed) are available.

Bird feeders are just one source of food for “problem” species such as house sparrows and European starlings that compete with native birds for food and cavity-nesting sites.

### **“Are there some foods I should not feed to birds?”**

Commercially prepared seeds are fine as long as they and the feeders do not get moldy. Bread and bakery products can be fed to birds, but they often attract such problem species as sparrows and starlings, along perhaps with nocturnal visitors.

In general, birds will consume food that is good for them and avoid the rest. And you want to offer the food preferred by the species you are trying to attract to your yard.

For hummingbirds, one part plain white granulated sugar to four parts water is recommended. Never use honey because it can cause a potentially fatal fungal infection on their tongues.

### **“Are cats a problem?”**

Cat predation on birds at feeders overall is fairly low. They have their largest impact on nesting birds and fledglings.

It helps to use hanging feeders, at least four feet off the ground, and put bells on the cats. And since they hunt by surprise, separate feeders from bushes and other hiding places.

### **“Will other predators be attracted to my feeders?”**

Birds gathering at feeders may attract wild predators, such as sharpshinned and Cooper's hawks. One study found that mourning doves suffered most from hawk predation, followed by house sparrows.



Placing feeders near escape cover such as trees and shrubs helps, as does simply a well-planted yard. Hawks are relatively rare and widely dispersed, and their hunting success is low.

### “Is disease a big problem at bird feeders?”

The primary diseases reported at winter bird feeders are salmonellosis, an intestinal bacteria, and house finch conjunctivitis.

If droppings from infected birds accumulate in or under feeders, the risk of other birds becoming infected increases. The risk also goes up at feeding stations that use platform feeders or that are visited by large flocks of social birds that feed in groups, such as sparrows, finches and juncos.

### “What is the best way to reduce the risk of disease?”

If you feed on the ground, place food on dry, well-drained or frozen soil. Rotate the feeding area, and clean up debris.

If you put food in a platform feeder or on a

deck or balcony, feed only as much seed as can be consumed in a day.

If you use tube feeders, which are the best for avoiding disease, clean out any moldy seed or wet residue regularly.

If you store seed, keep it in a cool and dry location.

### “How can I keep birds from flying into my window?”

Birds fly into windows because they do not see them, or can see through the house, or see the outside reflected on the glass. Placing feeders close to a window actually helps. Birds when alarmed hit the window before they have built up much speed. Plus they may “discover” the glass while feeding.

Hawk silhouettes are not very effective, but screening and netting are.

With these questions and answers in mind, people who enjoy the continent-wide pastime of feeding wild birds can make the hobby more enjoyable for both themselves and the birds.

## A P P E N D I X

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## Credits

Part 1. Margaret Clark Brittingham, Ph.D., conducted much of her research on supplemental feeding of wild birds (primarily chickadees) during the three winters that ended in April 1985.

She was a graduate student in the department of wildlife biology at the University of Wisconsin at Madison. Throughout her childhood, her family had fed wild birds, and she continues the practice as an adult.

Much of her work also involved Stanley A. Temple, her advisor, an ornithologist and a “habitual bird feeder.”

Since 1988 she has been an associate professor of wildlife research in the School of Forest Resources at Penn State University, where she continues her interest in and study of wild bird feeding.

Part 2. Condensed from the **Journal of Wildlife Management** (1992) 56(1):103-110 “Use of Winter Bird Feeders by Black-Capped Chickadees,” by Margaret Clark Brittingham and Stanley A. Temple, both (then) with the Department of Wildlife Ecology at the University of Wisconsin.

Part 3. Condensed from **The Wilson Bulletin**, Vol. 103, No. 3, September 1991 Population Dynamics of Blue Jays at a Bird Feeder, by Margaret B. Hickey (deceased 1976) and Margaret Clark Brittingham, then with the Department of Wildlife Ecology at the University of Wisconsin, Madison.

Part 4. Condensed from **Ecology**, 69(3), 1988, pp. 581-589, “Impacts of Supplemental Feeding on Survival Rates of Black-Capped Chickadees,” by Margaret Clark Brittingham and Stanley A. Temple, both (then) with the Dept. of Wildlife Ecology at the University of Wisconsin, Madison.

Part 5. Condensed from **The Wilson Bulletin**, Vol. 106, No. 3, 1994, pp. 514-521, Winter Survival of a Southern Population of Black-Capped Chickadees,” by Erica S. Egan and Margaret C. Brittingham, School of Forest Resources, Penn State Univ.

Part 6. Condensed from the **Journal of Field Ornithology**, Vol. 63, No. 2, Spring 1992, pp. 190-194, Does Winter Bird Feeding Promote Dependency by Margaret C. Brittingham and Stanley A. Temple, Dept. of Wildlife Ecology, Univ. of Wisconsin.

Part 7. Condensed from **Wildlife Society Bulletin**, 14:445-450, 1986, “A Survey of Avian Mortality at Winter Feeders,” by Margaret Clark Brittingham and Stanley A. Temple, both (then) with the Department of Wildlife Ecology at the University of Wisconsin, Madison. Brittingham, Ph.D., has been an associate professor of wildlife research in the School of Forest Resources at Penn State University since 1988.

Part 8. Condensed from **Pennsylvania Wildlife** No. 4, 1997, House Finch Conjunctivitis, prepared by Regina R. Allen, wildlife and fisheries science program, and Margaret Clark Brittingham, associate professor of wildlife research, School of Forest Resources at Penn State Univ.

Part 9. Condensed from **Cats and Wildlife: A Conservation Dilemma**, a 1997 literature-review publication of the University of Wisconsin-Extension, by John S. Coleman, Stanley A. Temple and Scott R. Craven with the Department of Wildlife Ecology at the University of Wisconsin-Madison.

Part 10. Condensed from **Wildlife Conservation in Metropolitan Environments**, 1991, and authored by Margaret Clark Brittingham, associate professor of wildlife research, School of Forest Resources at Penn State University.

Part 11. Condensed from an article, “Winter Bird Feeding — Real Worries and Needless Concerns,” from the February 1993 issue of **WildBird** magazine. Authors are Margaret Clark Brittingham, Ph.D., an associate professor of wildlife research in the School of Forest Resources at Penn State University since 1988, and John V. Dennis, the author of several backyard wild bird feeding books, including **A Guide to Bird Feeding**.



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