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WINTER FEEDING OF BIRDS
IN THE
WEST KOOTENAYS

by

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Wildland Recreation Technology

April 8, 1983

Submitted to L.O.Dunsford & J.Howard

in partial fulfillment of

the requirements of

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J. Howard , L. Dunsford
Selkirk College
Castlegar, B.C.

Gentlemen,

I am pleased to present to you my completed report
on "Winter Feeding of Birds in the West Kootenays".

The following report disclosed the results of my field
study that was carried out from October 1, 1982 to February
28, 1983. The feeder, food and location preference of the
bird species involved in the study are revealed based on
the field data. Also, recommendations to improve the number
of species and the range of species at a feeding station
are listed.

Thank you for your cooperation in this project.

Sincerely,

Miss Sandra Graves

Miss Sandra Graves

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INTRODUCTION

PURPOSE

The purpose of this report is to determine the most effective techniques for attracting birds to feeding stations in the West Kootenays. Suggestions for improvements to the commonly used feeding techniques are also included.

PROBLEM

There are extensive numbers of bird species migrating through the West Kootenay's biannually on the Pacific Flyway. Within the Kootenays are many people interested in attracting these birds to feeding stations. This report will deal with the problem of implementing feeding techniques that will effectively attract the most common bird species.

SCOPE

The study area for this report was Castlegar, British Columbia, but the information found in this report is relevant to the entire West Kootenay region. The number of bird species in the study was limited to seven. These species were chosen because they are common in the West Kootenays and also are common visitors to feeding stations.

Method of Investigation

The methods of investigation used in this study are extremely important as all of the conclusions and suggested improvements are directly linked with the methods of investigation used. There were basically three variables used in this study including food types, feeder types, and the location of the feeder.

Food Types

Three of the most common and popular food types used for attracting and feeding birds were used in this study. These foods were chosen for their ability to attract birds, relatively inexpensive cost, ease of acquisition and their practicality of use in a field situation. The foods were always placed in the feeders in abundance to ensure the supply would not run out. Suet, seeds and fruit were the three food types used in this study.

The seeds used were unsalted sunflower seeds and a commercial seed mix. Because almost all birds do use seeds in their natural diet, the seeds were very important in the feeding station.

Suet proved to be a very simple food to use at the feeding stations because the fat would congeal into one solid ball in the freezing temperatures. Suet attracted both the common bird species and also the more unique species such as the Redshafted Flicker.

Fruit was both placed out for the birds and found within the study area in vineyards and on fruit trees. Because birds are so accustomed to eating fruit in natural conditions no conditioning is necessary to attract the birds. The grapes, apples and pears remaining on the fruit trees and grape vines therefore, were an important additive to the feeding stations.

Feeder Types

Different feeder types were used to attract a range of species. Because each bird species differs in their need for cover or their specific location preference while they are eating, different types of feeders had to be provided to ensure that the needs of the birds were met. The platform feeder, which is simply a platform mounted on a solid pedestal with some overhead protection from weather factor or predators, was successfully used. The platform feeder is the most commonly used feeder because of the range of species that will use it.

Suet bags were used to hold the mixture of fat and seeds. The suet bags used in this study were mesh onion bags suspended from the trunks of surrounding trees.

Logs were also used for the ground feeding species. One inch diameter holes were bored into the logs and subsequently filled with seeds or suet. The logs provided an interesting location for the birds to perch and also an interesting variation in the feeder types.

Location

The location of the feeders proved to be an important facet to this study. The locations were chosen for their distance from human developments, density of bush, availability of perches and overhead cover, and finally the aspect. In this study four feeders were used and were placed in four individual and unique locations.

One feeder was located on the ground, three of the feeders had dense to moderate bush cover, one feeder had no bush cover

and all four of the feeders did have surrounding perches to varying degrees.

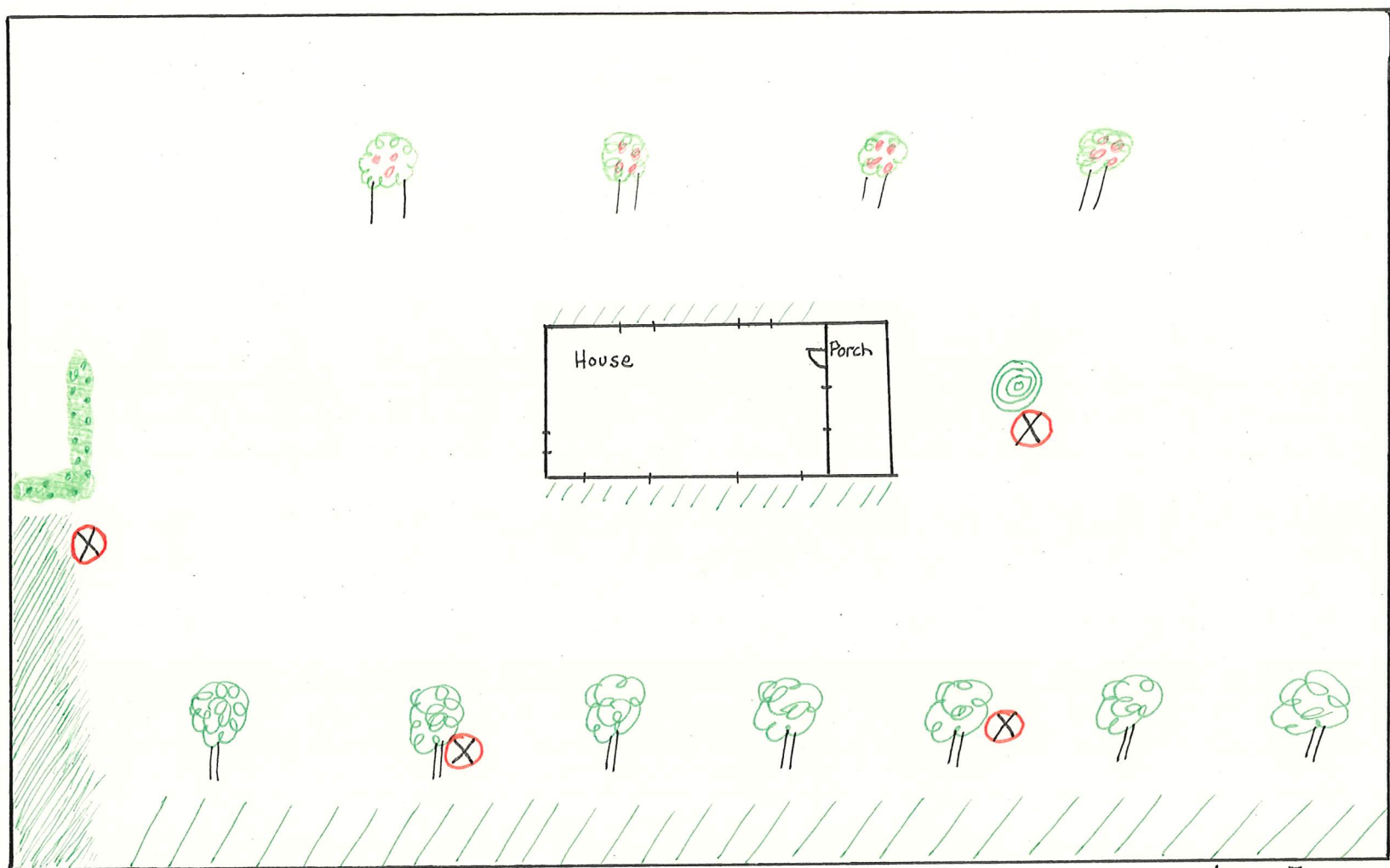
Observations

Observations were taken from October 1, 1983 up until February 28, 1983. The observations usually were taken in the morning and evenings of each week day. On Saturdays and Sundays, the feeders could be watched more closely. The times chosen for observations were due to the usual peak feeding times of birds and my own personal schedule which did not allow for extensive time periods of sitting and observing the bird feeders. The observations were taken from the house, porch, or yard area. (See map - Figure I) Because I did observe the birds from the house, the birds were allowed to function normally without any disturbance on my part. All of the feeders were visible from one of the windows in the house. Observations were written down to make sure that a clear and accurate account of what was seen was recorded immediately after the sighting.

Records

The records of the birds at the feeders included the species present, number of each species, what they were eating, amount of food eaten, time of day, weather, and social behavior. As a control for the record keeping section of this study, comparisons of my findings with those of the West Kootenay Naturalist Association were made. The comparisons proved to be important as they sometimes made me observe and record happenings among the species that could have been easily overlooked. A certain amount

of variation does , of course, occur between my observations and the West Kootenay Naturalist Association because of the range in geographical location of the feeders, and most importantly the length of time that the feeding stations have been established. for. Some of the West Kootenay Naturalists have had well established feeding stations for upwards of twenty years. Each year some of the same birds do return to the feeding station so that a precedents is set for the feeding station. My feeding station could not, of course , be expected to have the same degree of success as one of the more established feeding stations.



1cm = 5metres.

LOCATION OF BIRD FEEDING STATIONS

- | | | | |
|------------------|-------------------|----------------|--------------|
| = Deciduous Tree | = Fruit Tree | = Grape Arbour | = Dense Bush |
| = Bush | = Feeding Station | = Juniper | |

Figure 1

FOOD PREFERENCES

To determine the food preferences of each bird species in the study, records on what food type was being consumed by each species were taken. Assumptions were made as to the species food preferences based on the food type most commonly consumed by that species. The preferred food type for each species did become very obvious. To further qualify, the observed food preference, percentages of the amount of each food type consumed by the bird species were derived. Below, the food preferences are listed by species.

Stellar's Jay

The Stellar's Jay did not seem to have a particular food preference amongst the seeds, suet, and fruit. Over the course of the study the Stellar's Jay consumed approximately 5.3 pounds of seeds, 2.1 pounds of suet and 45% of the fruit. The 45% is an estimate as the quantity of fruit is undetermined due to the difficulty of quantifying the actual amount of fruit within the study area. According to this study then, the Stellar's Jay most preferred the fruit, suet, and seeds respectively.

Blackcapped Chickadee

Throughout the study, Blackcapped Chickadees consumed fairly evenly from each food source. Seeds turned out to be the most preferred food source with 3.5 pounds consumed by the Blackcapped

Chickadees. The fruit was the second most preferred food as the Blackcapped Chickadees consumed 13% of the fruit. The suet consumed by the Blackcapped Chickadees was 0.7 pounds. The overall food consumption for these rather small birds was surprizingly high throughout the study.

Grousebeak

The Grousebeak had definite preferences as to what food it preferred. Throughout the study the Grousebeak was always eating seeds. Among the seeds the Grousebeak showed an even more particular preference by usually only eating sunflower seeds. The Grousebeak was responsible for consuming 40 % or 8.8 pounds of the seeds. The other two food groups were not eaten at all by the Grousebeak.

RedShafted Flicker

The Red Shafted Flicker predominated as a species that preferred just one food type. Suet proved to be the Red Shafted Flickers favorite food as 60% or 4.2 pounds of the suet was consumed by this species. The Red Shafted Flicker was not observed consuming seeds or fruit. Therefore this species

Song Sparrow

The Song Sparrow most commonly ate the seeds and fruit. Seeds consumed by the Song Sparrow totalled 3.5 pounds and fruit eaten was 13% of the total. The suet was not a preferred food for the Song Sparrow as less than one percent of the suet was consumed by the Song Sparrow.

Dark Eyed Junco

The Dark Eyed Junco's preference was equally divided between the seeds and fruit. Consumed by the Dark Eyed Junco was 16% of the fruit and 3.5 pounds or 16% of the seeds. The Dark Eyed Junco is a fairly voracious eater and did consume a large proportion of food for the number of birds that frequented the feeders.

Redbreasted Nuthatch

Seeds and fruit were the preferred food choices of the Redbreasted Nuthatch. With 3.5 pounds of seeds and 13% of the fruit consumed by this species there is once again a fairly even preference among these two food types. The Redbreasted Nuthatch consumed less than one percent of the suet.

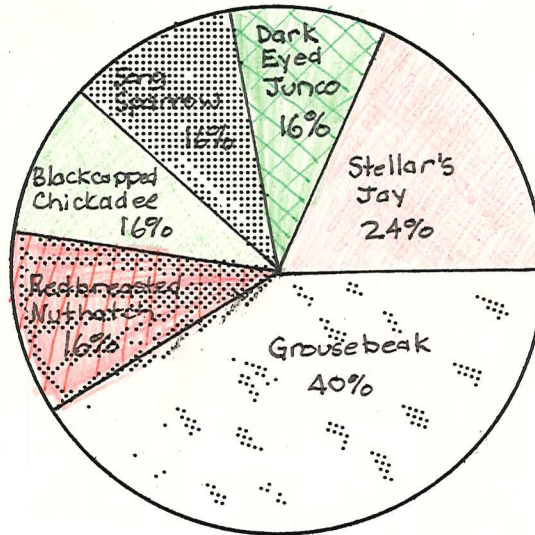
FOOD PREFERENCE BY SPECIES

| SPECIES | FOOD TYPE | | |
|-----------------------|-----------|------|-------|
| | SEEDS | SUET | FRUIT |
| Blackcapped Chickadee | X | X | X |
| Grousebeak | X | | |
| Redshafted Flicker | | X | |
| Song Sparrow | X | | X |
| Dark Eyed Junco | X | | X |
| Redbreasted Nuthatch | X | | X |
| Stellar's Jay | X | X | X |

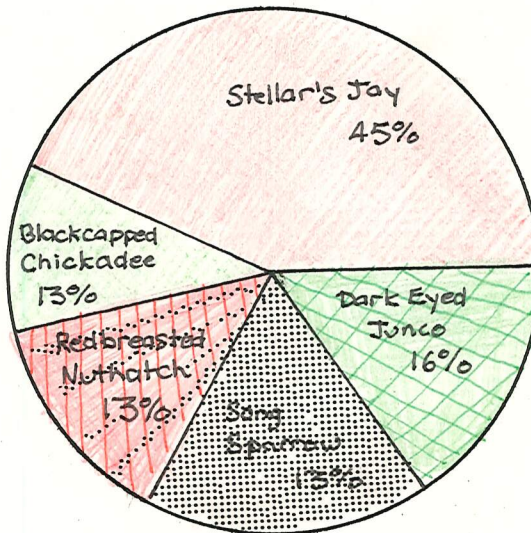
Table I
~~Figure II~~

% CONSUMPTION OF FOOD TYPES BY INDIVIDUAL SPECIES

SEEDS



FRUIT



SUET

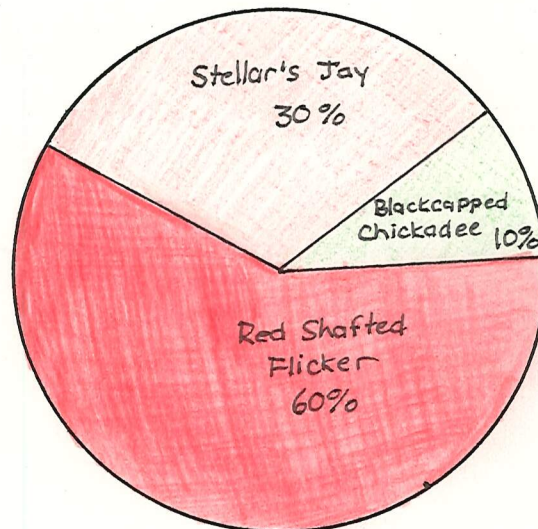


Figure II.

Feeder Preference

The preference that the bird species had for a particular design of feeder was determined by observing which feeder the bird species frequented most often. The observations of which feeder the birds were frequenting were recorded and later analysed in order to determine the feeder preference. The food type in the feeder was occasionally changed to offer variation. This variation ensured that the food type was not the only reason that the birds were coming to the feeder. An important key to the species feeder preference lies in the birds flying ability and physical attributes.. If a bird can not fly into an area or is too large to perch on a feeder then these factors will determine the feeder preference. In this study ^{the} three types of feeders used were the platform, suetbag, and log.

Stellar's Jay

The Stellar's Jay is a very curious bird and did use all of the different feeders available through this study. Because of this birds curiosity and ability to adapt itself to different situations it was able to successfully use the suet bag, platform, and log feeders. The only feeder the Stellar's Jay could not use was a commercially sold hanging feeder. (Figure IV)



Commercially Bought Feeder

Figure III

Stellar Jays were seen perched on the roof of this commercial feeder pecking vigorously at the plastic roof as if they were trying to go through the roof to retrieve the seed. This feeder did not have a perching area that was adequate in size for the larger birds. Platform and log feeders work the best for the Stellar's Jay. Due to the size of the Stellar's Jay, restrictions are set to some degree in how long they can hang onto and feed from a suet bag feeder.

Blackcapped Chickadee

The Blackcapped Chickadee feeds from almost any feeder. Due to the physical size and versatile flying abilities of this bird, almost any spot or perch can be reached. Because Blackcapped Chickadees do come to the feeding stations in flocks and spread out among the feeders it would be impossible to designate one particular feeder preference for this species.

Grousebeak *SP*

The Grousebeak preferred the platform and log feeders. This species is not a versatile or strong flyer and this limits the bird in what it can fly onto or into. Also, the Grousebeak does not have the dexterity that is necessary to feed from the suet bag feeders.

Red Shafted Flicker

The Red Shafted Flicker is a very specialized species and in turn needs a specialized feeder set up. The suet bag feeder

is designed with the Red Shafted Flicker in mind. Due to this birds tail that supports it while it is perched onto the trunk of the tree, the Red Shafted Flicker can stay for long periods of time at the suet bag feeder. The platform and log feeders did not seem to interest this species at all.

Song Sparrow

The overwhelming favorite of this species in terms of feeders was the platform feeder. However, the log feeder also proved to be an excellent feeder type for this bird. The Song Sparrow seemed to adapt readily to changes in the feeders and easily accept changes in the feeder set up.

Dark Eyed Junco

The Dark Eyed Junco paralleled the Song Sparrow in its preference for feeders. The platforms and log feeders were a suitable feeder type due to their practicality for a bird that does not have the ability to fly dexteriously enough to perch in the necessary locations for a suet bag feeder.

Redbreasted Nuthatch

This is a bird species that can use all three of the feeder types. There does not seem to be a preference among the three feeders as all three are used equally. The Redbreasted Nuthatch is a more nimble bird which does allow it to use the suet feeder.

FEEDER PREFERENCE BY SPECIES

| SPECIES | FEEDER TYPE | | |
|-----------------------|-------------|---------|-----|
| | PLATFORM | SUETBAG | LOG |
| Stellar's Jay | X | X | X |
| Blackdapped Chickadee | X | X | |
| Grousebeak | X | | X |
| Redshafted Flicker | | X | |
| Song Sparrow | X | | X |
| Dark Eyed Junco | X | | X |
| Redbreasted Nuthatch | X | X | X |

Table II
Figure IV

LOCATION PREFERENCE

The location preference, for the purpose of this study, is the location where the individual bird species spent the majority of their time while in proximity to the feeding station. The classification given for these areas is either ground, bushes or surrounding perches. It is also important to understand the location preference of the bird species in order to place feeders in favorable locations to attract a specific bird species. To determine which areas the birds actually preferred they were observed and the location of the feeding bird was recorded. The

Stellar's Jay

The Stellar's Jay was able to use the ground and surrounding perches to their advantage. The bushes generally were not strong enough to support the weight of the bird. The gregarious nature of the Stellar's Jay makes it possible for this bird to use just about all of the areas^{around the feeding stations.} with lots of perches in larger trees and a fairly open ground area would be well suited to the Stellar's Jay.

Blackcapped Chickadee

Bushes and surrounding perches are the optimal location for the Blackcapped Chickadee as the bird did not spend much time on the ground. An area with an abundance of bushes and other perches would be ideal for this species.

Grousebeak

The Grousebeak preferred the lower areas such as the ground and bushes. This choice is probably because the Grousebeak usually finds its food in these locations. Placing log feeders on the ground in semi-open areas would be advantageous to attracting the Grousebeak.

Red Shafted Flicker

Throughout the study the Red Shafted Flicker was spotted only on the boles of the surrounding trees. Because of this preference there is a limited chance of attracting Red Shafted Flickers to an area unless some sort of surrounding perching areas are provided.

Song Sparrow

Song Sparrows are generally a ground feeder so they had a natural affinity for the ground classification. The bush areas also seemed a favorite location for this species. Song Sparrows are receptive to almost any area and would likely show up at any feeding station.

Dark Eyed Junco

The Dark Eyed Junco was much the same as the Song Sparrow in its location preferences. A difference between these birds, however, is that the Dark Eyed Junco, being larger than the Song Sparrow, could not use the bush area as much. Instead

the Dark Eyed Junco used the surrounding perches. The ground was also used extensively by this species. Areas that are semi-open with lots of surrounding perches would be well suited to the Dark Eyed Junco.

Redbreasted Nuthatch

Similar to the Blackcapped Chickadee in size and behavior, the Redbreasted Nuthatch also utilized the bush and surrounding perches. Areas with more cover seem to attract this species with greater success than the wide open areas.

LOCATION PREFERRED BY SPECIES

| SPECIES | LOCATION | | |
|-----------------------|----------|--------|---------------------|
| | GROUND | BUSHES | SURROUNDING PERCHES |
| Stellar's Jay | X | | X |
| Blackcapped Chickadee | | X | X |
| Grousebeak | X | X | |
| Redshafted Flicker | | | X |
| Song Sparrow | X | X | |
| Dark Eyed Junco | X | | X |
| Redbreasted Nuthatch | | X | X |

Table III
Figure ~~IV~~ VI

SOCIAL BEHAVIOR

The social behavior of the bird species has been included in this report because it is as important to attract species that will interact peacably as it is to provide the proper type of food. The individual species behavioral characteristics can be found in the Background Research Report for this study. The following section will deal with how the bird species interact with one another.

Species Interactions

For the most part, the bird species in this study did coexist peacably. All of the species could feed from the same feeder without causing too much confusion or disarray amongst the other bird species. An exception to this is , however, the Stellar's Jay. This species is , as mentioned above, very overbearing and seeks dominance in all situations. Because of this characteristic the Stellar's Jay would often chase or scare the meeker birds away. Besides this example, all of the other species in this study did interact without any problems. The Red Shafted Flicker proved to be a rather solitary species that rarely interacted with any other species. On the other hand, the Blackcapped Chickadees and Song Sparrow were constantly around the feeder area and always interacting with the other species.

Species Aggressiveness

The most aggressive species by far was the Stellar's Jay. This species would go to any lengths to chase or scare the other birds away. The Stellar's Jay even became quite tolerant

of humans as you could walk within six feet of the bird. Screeching and divebombing cats, other bird species, and sometimes even humans is a definite sign of aggressiveness on the part of the Stellar's Jay. Another bird species that , for its size , was fairly aggressive was the Song Sparrow. Although initially rather meek, this species would become aggressive when the smaller Blackcapped Chickadees were in the area. The Song Sparrows would try to keep the feeder for their own and try to scare the other birds away.

Flocking Behavior

Bird species that displayed themselves in small flocks were Song Sparrows, Blackcapped Chickadees, and occasionally Redbreasted Nuthatches. Starlings , a species not covered in this study but yet abundant in the area, would fly into the feeding area in a flock. Once the Starlings were at the feeding stations the flock would eat almost all of the food and then fly off. The other bird species covered in this study did not form flocks. Quite often the other species would appear in groups of two to four birds. The flocking behavior , most likely, offered a means of protection from predators.

Time Spent at Feeder

The bird species that spent the most time in or directly on the feeder were ^{respectively,} the Stellar's Jay, Song Sparrow, Grousebeak,

and the Dark Eyed Junco. Because these birds felt more confident in the presence of the feeders and were not afraid of the other species they could afford to stay for greater periods of time at the feeder. The Blackcapped Chickadees and Redbreasted Nuthatches have a more nervous nature and do not feel comfortable staying for long at the feeder. Where the other birds would fly to the feeders and eat from the feeding tray, the Blackcapped Chickadee and Redbreasted Nuthatch would often just fly to the feeder, quickly peck at the food, and then fly away. The Red Shafted Flicker was also a species that did not stay around the feeding station for long periods of time. The Red Shafted Flicker would fly to a suet bag, peck at it for a short period of time and then fly off sometimes for the rest of the day.

IMPROVEMENTS

To improve upon the number of birds and the diversity of the bird species, eliminate unwanted bird species, or to attract one particular species, many interacting factors can be manipulated. The following improvements can be used to change the "habitat" for the bird species.

Landscaping

By landscaping property with bird feeding in mind, many changes for improving the bird "habitat" can be made. In this study it was noted that most of the birds frequented the areas within the property that had bushes, trees or , in general, overhead cover. By leaving naturally occurring bushes or planting bushes in a yard the bird species will feel more secure and will therefore frequent the area. Shrubbery or trees that have berries or fruit on them such as the Mountain Ash are exceptionally well received by the bird species. If small streams or ponds occur naturally on the property then this is very helpful. Birds will travel to water for quite a distance during the winter because most water sources are frozen or simply do not exist. Therefore, by incorporating a water source or artificial pond into a landscaped yard birds will be even more attracted to the area.

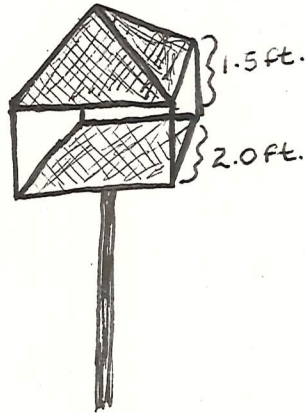
Location

To improve upon the location of the feeding station, one should take more advantage of the natural surroundings. Even in this study, improvements on the location of the feeding

stations could have been made by placing the stations into denser bush and consequently more natural surroundings. The natural surroundings are important in order to make the bird species feel more at ease. The natural surroundings must not be in too dense of bush, however. If the bush is too dense the birds will not easily find the food and the feeding station will not be visible to the individual who set it up. To view a feeding station and have maximum visitation by the bird species, all of the above factors and proximity to human developments must be considered. If the feeder is directly adjacent to a building or some other human development the birds may be too shy and never frequent the feeding station. A careful balance must be reached between how close the feeder can be placed to the human development and still have a natural surrounding. The impact that the human development does have on the feeding station will be dependant on the size, noise, or influence it has on the feeding station. In general, trial and error is the principle used in finding allocation for a feeding station. Another factor that can be taken into consideration when setting up and locating the feeding stations is to place the feeders close to one another so that the birds travel from one feeder to the next. If the stations are spread slightly apart then travel routes from one station to the next can be established by the birds. Having the stations set apart from each other will also prevent a meeker species from being chased away by another species. The meeker species can travel to the next station and resume its feeding.

Feeder Design

One of the feeders used in this study had a sloped roof covering the feeding tray. There was a fault with this design because the larger birds could not enter the feeder from all angles. It is important to ensure that the size of the feeder does accommodate all of the species. For this reason, a feeder with a high roof and open sides is suggested for an all round feeder type.



Recommended Feeder Type .

Figure IV.1

In addition , cylindrical mesh wire feeders for suet would be better than the nylon mesh onion bags because they hold up better to use from the Red Shafted Flicker.

CONCLUSION

A Bird feeding station does offer a multitude of challenges to the operator of the station. Attracting more birds and a variety of bird species to a bird feeding station can be accomplished through manipulation^{of} many factors such as the food and feeder types, and the location of the feeder itself. These changes will substantially improve upon the quality of the feeding station if they are properly instituted.

Through the course of this study, I have discovered different techniques to attract the birds to the feeding station. These techniques form the bases for the following suggestions for improvement.

Recommendations

To improve upon the feeding station one must acquire a feel for what is wrong and how the feeding station could be improved. Because there are so many interrelated factors when you are dealing with bird species, such as the individual bird species preference for food, feeder and location of the feeders, it can sometimes be difficult to know exactly how to change the situation for the better. Through the information cited in this report and the following suggestions, it is possible for all interested individuals to develop a successful bird feeding station.

1. Offer a variety of feeders, food and locations. The variety will be advantageous in attracting a wide range of species.

- 3021 70-YAM
2. Ensure a supply of fresh water as many birds do seek water in the winter months.
 3. Carefully observe the birds and the feeders so that you can tell if they like or dislike the food, feeders or location.
 4. Landscape your yard to offer perches, natural sources of foods such as fruit, and to break up the yard so that the birds feel less intimidated by the openness of the yard.
 5. Do not change the location of all the feeders at one time as this could easily confuse the birds and frighten them all away.
 6. Be patient. Do not expect overnight success as it does take the birds sometime to find the feeder and form the habit of coming to the feeding station.
 7. Be consistent in stocking the feeding station with food. Your inconsistency in supplying food will inturn make the birds inconsistent in visiting the feeding station.
 8. Do not be afraid to try something new. Be innovative, trust the knowledge that you have acquired and the feeling you have for what needs to be changed or modified.