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BLACKBIRD BEHAVIOR

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A knowledge and understanding of a bird's habits and behavior patterns is prerequisite to any intelligent approach toward solving problems created by that species. This also applies to associated species commonly observed with it. Since my subject today is blackbirds I will confine my observations to species in this group, particularly red-winged blackbirds.

The Red-Winged Blackbird, (Agelaius phoeniceus) is numerically and economically the most important. Several sub-species or races are recognized and in California the most important of these is the Bi-colored Blackbird, (A. p. californica). The ranges of subspecies commonly overlap, particularly in the Southeast, and field identification is often difficult.

In the central valley of California the Tri-colored Blackbird, (Agelaius tricolor) is responsible for much of the depredation in crops, particularly rice.

Another typically western species is the Yellow Headed Blackbird, (Xanthocephalus xanthocephalus) which commonly winters in the Southwest and Mexico. This is a large blackbird easily recognized by the black plumage and yellow head.

A common blackbird of the West and North-central States is Brewer's Blackbird. The males are black with yellow eyes while the females are grayish with dark eyes.

Grackles, (Quiscalus quiscula), are large shiny blackbirds with a long wedge-shaped tail and are more common in the East.

A common associate of all the above species during the fall and winter months is the Brown-headed Cowbird (Molothbus ater).

The well-known Starling, (Sturnus vulgaris) is also found associated with all of the above species, particularly in their fall and winter concentrations.

Red-wing, grackle, cowbird, and starling combinations comprise many of the enormous winter concentrations in the Southeast. In the Southwest, redwings, yellow-headed, and Brewer's blackbirds commonly associate with cowbirds and starlings during the winter months. These associations are usually dissolved in the spring during the breeding season.

All of the above species, plus several more, are often indiscriminately referred to as "blackbirds". Since the habits and behavior patterns differ with each species correct identifications are necessary before a control program is planned, I have frequently recommended control procedures by mail which were unsuccessful because of incorrect identification of the offending species. Starlings and red-wings are often confused and several times control procedures for starlings were recommended when actually only red-wings were involved. In recent years, the starling has achieved considerable notoriety and to many people any dark-colored bird is a starling. It is important that the correct identification of the offending species be established, preferably by direct observation.

All of the species mentioned are gregarious during the fall and winter months and enormous concentrations often result from this instinctive characteristic. Such concentrations are capable of considerable damage in crop depredations, in their night roosts, and as hazards to aircraft.

There is often a segregation of the sexes observed in winter populations of blackbirds and cowbirds. This is particularly noticeable in the Southwest where males predominate in one feeding area and females in another. There is some evidence that the sexes more or less roost separately even though they occupy the same roost area. Careful observations frequently reveal females leaving the roost together and males leaving with their sex.

Red-wing winter roosts are usually in dense brush or rushes preferably those standing in water. The birds filter down through the overhead cover and perch from one to three

feet above the water level. This provides them with some shelter and protection from avian predators and the water deters terrestrial predators. Proximity to the water probably contributes to their comfort on cold winter nights. Grackles, cowbirds and starlings are common associates in this type roost.

Flocks of red-wings may begin arriving at the roost site as early as 80 minutes before sunset on clear days, depending on their feeding success. However, the major movement to the roost usually occurs from 30 minutes before sunset to 15 minutes after sunset after which stragglers continue to arrive for an additional 15 minutes. Light intensities during this period range from 1000 + foot-candles to 15 foot candles. Stragglers will continue to arrive at zero foot-candles. The precise roost arrival times must be determined locally since they vary with latitude. Over-cast or rain will cause the birds to arrive 20 to 40 minutes early. All but the late stragglers habitually "pre-roost" on elevated perches nearby for varying lengths of time before moving into the night roosts. These pre-roosts may be atop their roost vegetation, it may be in trees or on power lines 1/4 to 1/2 mile away. Pre-roosting behavior is common in areas where plentiful feed is available at reasonable distances from the roost. Late arriving stragglers fly directly to the night roost. All of the species mentioned may be observed in pre-roosts and apparently this phenomenon represents well-fed birds awaiting the proper light intensity which motivates their entrance into the night roost.

The exodus from the roost in the morning is of much shorter duration than the arrival. Red-wings rise to the top of their roost vegetation and begin "chorusing" about 20 minutes before sunrise. A few small flocks usually leave prematurely but the major movement begins about five minutes before sunrise at a light intensity of 30-40 foot-candles. Again, the clock time of departure must be adjusted for latitude and season. Often the departure from the roost is quite abrupt and spontaneous. Small roosts are often cleared in one or two minutes. Large roosts containing millions of birds may require 15 minutes or more. Usually, roosts are cleared by the time the light intensity reaches 200 foot-candles. Inclement weather will delay the roost departure often as much as 30 minutes.

Red-wings in winter roosts, and associated species, commonly move directly to available feed from the roost. If cattle feed-pens or other permanent food sources are available they occasionally will forage in fields enroute, Grackles often precede the blackbirds by a few minutes when these two species roost together.

During the day wintering blackbirds alternately feed and then loaf depending on the availability of food. Feeding in open fields is usually in their characteristic "leap-frog" fashion in which all move in one direction, the rear birds rising and landing ahead of them. This behavior is more or less continuous and resembles a rolling flock of birds proceeding across a field. If undisturbed, this feeding pattern continues until the end of the field is reached whereupon the flock may move to another spot in the field or fly to a different area. The characteristic "stream" pattern of red-birds enroute to a winter roost originates from this rolling feeding pattern. Late in the day red-wings commonly forage in the general direction of the roost. As the rear birds become satisfied they rise and fly directly toward the roost. This continuous rising and flight forms a more or less well defined stream and large flocks result in streams many miles long.

Red-wings and associated species subsist largely on vegetable food during the winter months when large concentrations are most troublesome. Various grains, nuts, and other foods having high caloric values are preferred. In the Southwest wintering blackbirds enjoy an unfailing source of food in the many cattle feeding operations common in that area. The various rations fed to cattle contain many ingredients preferred by blackbirds and usually these feed-pens are well populated by birds. In the Southeast the wintering populations are supported by waste grain, peanuts, pecans, and weed seeds.

The spring breeding season provides some relief from the depredations of blackbirds. The large winter concentrations are dissolved and while some of the aforementioned species nest in colonies their food preferences change more to animal food and insects then form a substantial portion of their diet. During this period they can be observed foraging in crops but close inspection will reveal they are feeding principally on larvae, and other animal food. In this respect, blackbirds, at times, are highly beneficial.

In response to their gregarious instincts blackbirds gather into flocks in late summer and early fall and thereafter become quite troublesome in many areas. Unfortunately, this assembly period coincides with the maturation of many field crops and serious depredation

results.

As I pointed out earlier, the various species of blackbirds, and associated species, do not respond alike to the same stimuli. Control procedures designed to discourage or eliminate nuisance birds fall into three major categories; chemical, visual and acoustic. We shall concern ourselves here with the last two - visual and acoustic - and the birds' responses to these.

In general, it can be said that strictly visual stimuli such as scarecrows, inanimate replicas of animals, glittering devices, etc., are usually not effective. Probably the most effective visual stimulus is a predator or human. The initial response to visual stimuli is immediate flushing of the birds followed by a departure flight to the nearest cover or elevated perch. However, continued exposure to the same stimuli results in the birds accepting it as part of the environment and thereafter they ignore it. This is true even of humans' presence, particularly with cowbirds, starlings, and Brewer's blackbirds. If this were not so there would be no birds in our cities and towns.

There are many acoustic scaring devices and techniques used to evict or discourage birds. Various noise making devices have been used for centuries by ancient civilizations in an effort to protect their crops. Until recently, very little has been introduced in the way of new techniques and devices. Now, however, automatic exploders of various types, pyrotechnics, and electronic audio devices are available, all of which *are* designed to expose birds to noise or other sounds and frighten them away from protected areas.

The response of birds to these acoustic stimuli varies with the species. Starlings for example habituate to artificial noises much slower than red-wings or cowbirds. Yellow-headed blackbirds continue to respond to sounds after red-wings, associated with them, have learned to ignore it. Here again, it is a question of how much time elapses before the birds accept the sound as part of the environment, the same as they do traffic, aircraft, and other noises. Complete inurement to a sound may require only one-half hour or several days depending on the species, conditions, nature of the sound, its intensity, and the frequency at which the birds are exposed to it. Some species are naturally shy and acoustic stimuli are often quite effective for long periods. The blackbird group is not one of these and red-wings, Brewer's blackbirds and cowbirds are highly refractory and quickly habituate to strange sounds.

One of the most widely used methods of controlling blackbirds is to harass them with gunners using shotguns. What success is achieved with this method is due not to the noise but by the combination visual-acoustic stimulus provided by a human actuating a noise making device. However, unless intensively and consistently carried on this control method often is unsuccessful. Blackbirds, and other species feed early in the morning, often long before the shotgun crew is on the job. It is important that any control activity be synchronized with the birds' schedule which means early morning rising for the personnel involved. Unless this is done the control program stands little chance of success.

In recent years the use of bio-sonics has received considerable attention. This method of bird control involves the use of birds' communication sounds, usually their alarm or distress calls. These sounds are reproduced on tape, amplified, and projected at the birds through loud speakers. The method is highly effective if the proper sounds are used. My experience has been with alarm sounds because they usually are more effective than distress calls.

Actually, bio-sonics is a modified form of biological control since the alarm sound of a bird has a biological significance to it. It indicates the presence of a predator and is usually well developed in gregarious species. Birds respond to application of alarm sounds by tending to avoid areas where these sounds are present. If the proper sounds and technique are used they do not really inure to this method. In fact, a well executed bio-sonics program results in a gradual decrease in the target species population over a period of four to five days. During this time the population may drop by as much as 95%. Decreases in blackbird populations of 80% have been achieved in three days.

Usually, alarm sounds are quite "species specific" and one species will not consistently respond to sounds of another species. For example starlings, when associated with blackbirds will respond to blackbird sounds but blackbirds seemingly ignore starling sounds. Yellow-heads have been observed to respond to red-wing sounds but red-wings respond reluctantly or not at all to yellow-head sounds. The most refractory species in this respect

are cowbirds which do not consistently respond to any sound.

The importance of using the proper alarm sound has been mentioned. Many unsuccessful efforts to control blackbirds have failed because of incorrect sounds or poor application techniques. While most bird species will respond initially to any strange sound only survival sounds will consistently produce the desired control results. Survival sounds, such as alarm calls, convey specific information to others of the same species and unless the sounds projected have definite survival value the birds will not be stimulated to escape.

Many bird species seemingly emit the same sound in very different situations. However, careful analysis of these sounds often reveals subtle variations which are undetected by the human ear but are perceived by the bird. Each variation transmits different information which determines the nature of the bird's response. So, while one may believe he is projecting alarm sounds he may actually be transmitting other information to the bird. Snap conclusions regarding the significance of bird sounds are to be avoided. Interpretation and identification of birds' survival sounds should be deferred until repeated exposures to the sound, under varied conditions, produces the same overt response.

We cannot escape the conclusion then that any bird control program has little chance of success unless some knowledge of the species' behavior patterns and habits are known, and uti1ized.