

## UNUSUAL MOBBING BEHAVIOR BY INCUBATING PIÑON JAYS

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During the incubation period, female Piñon Jays (*Gymnorhinus cyanocephalus*) nesting in colonies spend over 95% of their time on the nest. The high proportion of time spent incubating is probably due to the fact that eggs are laid and incubation initiated during February and March when the weather is cold and snow is rather common (Balda and Bateman 1971). A female obtains almost all nourishment at this time from her attendant mate. Food exchange is accompanied by loud, harsh begging calls (given before, during, and often after actual transfer of food) and by characteristic posturing consisting of a frantic flapping and quivering of the wings as the females approach the males. After food exchange, the male flies off to forage and the female returns almost immediately to the nest. Begging and short flights to and from the nests are the most dynamic and conspicuous behavioral patterns performed by females during incubation.

The reactions of male and female jays to the authors and to live and stuffed Great Horned Owls (*Bubo virginianus*) during this period of the year have been recorded on numerous occasions. If a stuffed Great Horned Owl is placed within the nesting colony, it will not be mobbed until sighted by males as they enter, leave, or feed in the area of the colony. Females incubating eggs have not been observed leaving their nests to participate in mobbing until after males initiate this activity. Males give a characteristic, rhythmic, scolding *krawk* which usually attracts other males, as well as females, from nearby nests. The males scold and mob the owl for varying periods of time by diving at it with legs extended, scolding it from perches overhead, and slowly walking up to it while scolding loudly. During scolding, the wings are held stationary near the body, the folded tail is held horizontally above the substrate, the neck is slightly extended, and the bill is pointed at the owl. Birds may fly to within 1 m or walk to within 3 m of a stationary owl. Stuffed owls are often mobbed sporadically for 3–4 hr. Females perform in the same manner as males for the first 5–8 min after their arrival at the mobbing site. After this time, however, in some females the loud, typically rhythmic *krawk*, usually given during mobbing, slowly begins to change to the begging call used to solicit males to feed them. The intermediate stage of the transition of the *krawk* to the harsh *quay* of the begging display is most unusual and would not be recognized if one did not follow the entire sequence. As the *quay* becomes well-developed and recognizable as the begging call, females also begin to flap their wings. They do not, however, assume the full begging posture which includes the tail touching the ground and wings flapping vigorously. Their actions are directed toward the owl rather than toward another scolding bird.

The act of begging for food is often considered

a submissive or appeasement behavioral pattern performed to lower the level of aggression in the partner. Begging, as performed by adult female Piñon Jays, is almost identical to that of young birds just after they leave the nest. The wing movements associated with this juvenile act may be considered to be ritualized intention movements of flying either toward or away from the parent (see Goodwin 1956). Courtship begging, as described above, may thus contain elements of both approaching and fleeing when performed to the mate. Goodwin (1952) suggests that juvenile-type courtship begging "may be due to an 'infantile' mood of dependence or intense eagerness. . . ." The appearance of this particular behavior in the context described above lends itself to many interesting speculations, however only a few will be described here.

Hinde (1954a) discusses the ambivalence of the mobbing response of Chaffinches (*Fringilla coelebs*) as a conflict between tendencies to approach and flee the potential predator. This may also be true for incubating female Piñon Jays as time spent away from the nest in normal situations is very short. Thus, females may have strong conflicting tendencies to mob the potential predator (even though it is not a direct threat to their nests), flee the predator (as it may be a direct threat), and to return to the nest and resume incubation. This conflict could lead to the emergence of a displacement activity, i.e., begging for food. Begging does seem inappropriate within the context of the mobbing situation. The appearance of this behavior pattern might be explained by the hypothesis of van Iersel and Bol (1958); the disinhibition of begging (which is a very common behavior during this time) comes about when the stimuli for mobbing and incubation cancel one another, thus reducing the inhibitory effects they may have on begging behavior.

Another possible explanation is that two simultaneous stimuli are activating two responses in the female Piñon Jay. The stronger stimulus may be the presence of the owl, the weaker, the presence of the mate who is also participating in mobbing. If, during mobbing, the female jay perceives her mate, she may be stimulated to beg from him. The begging behavior, however, is not a complete act and is misdirected at the owl. This may indicate that the mere presence of the male does not serve as a complete stimulus or that his presence is overridden, in part, by a stronger stimulus from the owl. The female may also habituate to the presence of the stuffed owl, while becoming increasingly responsive to the presence of the male. The emergence of an appeasement behavior directed at the potential predator may, thus, be totally coincidental and potentially disadvantageous within the context of this situation.

Because stationary, stuffed owls were used, it is possible that the mobbing response on the part of the female Piñon Jay quickly waned as the owl did not respond to the mobbing. Hinde (1954b) reported that *F. coelebs* began to perform other activities as the mobbing response gradually waned. The rapid waning of the response by the female may be related to her normal behavior for this period, that of incubating eggs in a cool to cold environment. The selective advantages of a rapid waning of the response are obvious. This would be especially true if the mobbing response were not reinforced by some action on the part of the potential predator.

The unusual behavior discussed above is not totally

unique. We have found three recorded instances where birds mobbing predators exhibited breeding-related behaviors. Goodwin (1952) observed a male Lanceolated Jay (*Garrulus lanceolatus*) perform juvenile-type begging at a stuffed owl that the jay was in the process of mobbing. Smith (1970) reports Cactus Wrens (*Campylorhynchus brunnei-capillus*) performing behavioral patterns normally associated with courtship while vigorously mobbing a ground squirrel. Male Snow Buntings (*Plectrophenax nivalis*) were observed to intermittently display territorial fighting while in the act of mobbing a Northern Shrike (*Lanius excubitor*) (Cade 1967). Thus, in the presence of conflicting stimuli, it appears that mobbing behavior may be overridden as other types of social behavior emerge. The type of behavior most likely to be elicited is an act which is prevalent within the birds' repertoire at that time of year.

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## CONFUSED NOCTURNAL BEHAVIOR OF A FLOCK OF MIGRATING YELLOW WAGTAILS

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Amadon's (1966) interesting account of the confused nocturnal behavior of a flock(s) of gulls in a storm situation was called to mind one night when I observed a rather similar occurrence involving a flock of Yellow Wagtails (*Motacilla flava*) at Tam Ky, Quang Tin Province, Republic of Viet Nam. I lived on a compound in Tam Ky (108°30' E, 15°34' N), about 70 km SE of Da Nang (formerly Tourrane), on the central Coastal Plain. The perimeter of the compound was illuminated by 1000-watt floodlights mounted approximately 50 ft apart and aimed outward at various angles of inclination from the ground.

On the morning of 8 October 1967 at 00:30, I was alerted by excited "tchi tchi" notes. At the perimeter of the compound, I found a flock of about 30 birds perched on the wire fence or on the ground. The glow from the perimeter lights reflected off the low cloud ceiling (reported at 75-100 m by the U.S. Air Force Unit of Tam Ky) provided enough light for me to identify the birds as Yellow Wagtails. The air temperature was 12°C, and the weather was overcast with a persistent fine mist, called "krachin," which is typical of autumn and winter months at Tam Ky. At intervals of 3-5 min, there was a sudden increase in the frequency of calling and the birds took off, nearly in unison, gathered into a compact flock and wheeled overhead for about a minute, after which they landed along the fence again.

I detected no difficulty in maneuvering or in landing on the wire fence and no evidence that the birds were blinded. The birds did not appear to be feeding on the insects swarming around the lights. The pattern of frenetic bursts of activity continued for more than an hour while I watched the apparently "imprisoned" wagtails. When I returned to the spot at 02:30, however, the birds were gone, although I could detect no change in the climatic nor illumination conditions.

During the hour of observation, I heard passing flocks of several kinds of passerines and shorebirds which flew by in the darkness, and only the wagtails seemed affected by the lights. Alcasid (pers. comm.) mentions netting many wagtails by night-lighting at a mountain pass in the Philippines on foggy nights. Clapham (1961) was also impressed with the significance of pipits and wagtails being attracted to lighthouses, and mentions this as important evidence that they migrate at night. Schuz (1956) reported Yellow Wagtails migrating by day along the south coast of the Caspian Sea. However, in Viet Nam, flocks of the three common (migrants) species of wagtails [Yellow; Grey (*M. cinerea*); Pied (*M. alba*)] terminated their flights soon after sunrise, and I never observed flocks migrating by day.

Many reports of bird-kills at television towers, skyscrapers, and other structures have appeared since Allen's (1880) account. Among others, Cochran and Graber (1958), James (1956), Stoddard and Norris (1967), and Tordoff and Mengel (1956) have discussed the problem. Although low cloud ceiling and/or fog, and moonless nights during the migration period are the common themes in these reports and in newspaper accounts of bird-kills, direct observations of the incidents reveal that several different phenomena may be involved. The gulls reported by Amadon (1966) were milling about in a dense snowstorm, apparently attracted by the glare of city lights, and Francis (1967) suggested that the