

# Foraging tolerance of the Indian myna towards the house sparrow: an observation

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## Abstract

Various faunal species exhibit tolerance behavior both within and among species during foraging, and birds are no exception. Some species of birds are more tolerant towards others while in the vicinity of a similar or limited food source. The Indian myna (*Acridotheres tristis*) and the house sparrow (*Passer domesticus*), common residents across India, were observed feeding in close proximity, and displayed a level of understanding between them. A short study was conducted in 2010 in the city of Pune, Maharashtra to study this behavior closely. It was observed that the Indian myna displayed a certain level of tolerance towards the house sparrow even when the food source was similar or reduced in amount; and aggressive behavior towards other larger species of birds. Despite this acceptance, there was an established and respected "tolerance distance" between these two species, strictly adhered to by the house sparrows.

**Keywords:** *tolerance distance, Acridotheres tristis, Passer domesticus, Pune, Maharashtra, India*

## 1. Introduction

Different species of birds often utilize diverse techniques when competing for food [1] and such strategies are more visible in social groups [2]. For example, while some individuals concentrate their effort in finding new feeding areas, others simply take advantage of such freshly discovered sites [3]. Various authors have suggested that such a behavior could be due to food distribution [4], predation risk [5], age [6], or dominance [7].

The Indian myna (*Acridotheres tristis*) is a member of the family Sturnidae, and is native to Asia. It has a brown body with a black hooded head, bare yellow patch behind the eye and bright yellow bill and legs [8]. It is an omnivorous bird with strong territorial instincts. Its aggressive nature often poses a threat to native bird species in various

countries [8]. The house sparrow (*Passer domesticus*) belongs to the family Passeridae, has a wide global distribution, and is a sociable bird that lives in flocks of variable sizes. The female has a pale brown color, whereas the male has a white, black and brown marking on its body [9]. They are opportunistic feeders, generally feeding on grains, and often use other birds' ability to locate food [10], and at times use larger species of birds for protection against predators [3,7,11,12].

The foraging behavior between the Indian mynas and other species of birds has been observed previously [13], with an attempt to understand the level of aggressiveness and tolerance towards other species depending on the availability of food and location [14,15]. In the current study, a similar attempt was made to observe and record the foraging behavior between the Indian myna and the house sparrow in the city of Pune, Maharashtra, and deduce a possible explanation for such a foraging relationship between the two species.

## 2. Methodology

The study site was chosen based on a pilot study of 7 days, which was carried out to locate a large flock of house sparrows and Indian mynas frequenting a common foraging area. The mynas and the sparrows were acclimatized initially to feed within an established transect, i.e., a black plastic sheet (90 x 60 cm) for 10 days, using randomly distributed whole white rice grains (250 g) as a food source. Before the recording of any behavioral observations, i.e. after the acclimatization period, the area near to transect was swept to remove any traces of foreign food which the birds could alternatively feed on. The amount of rice grains

(200 g) was kept constant in an orderly heap (15 cm x 15 cm) on transect for the first week, to habituate the two species of birds to a defined feeding area. The spread (15 cm x 15 cm) and the amount of grains were reduced from the second week onwards by a factor of 0.5, after every 7 days.

The interaction between the two species, i.e. competition or aggression during foraging, and the tolerance level was observed. A thin black rope (5 m in length) was tied on a peg across transect. This rope was flicked to scare away all the other birds which arrived at the sheet, and only the mynas and the sparrows were permitted to feed on the grains. Observations were recorded during the winter months in 2010. The similar flock of sparrows of varying size ( $n = 3-15$ ) and the mynas ( $n = 2$ ) was observed throughout the study. The behavior of the two species of birds was recorded for a period of 1 hour from 6:15 to 7:15 am every day. This feeding time was established with the help of the acclimatization period. After the observations were recorded, transect was removed from the experiment site every day. There was no capturing or keeping of the birds in this study, and all the records were made by simple observations in the wild.

### 3. Observations

During the acclimatization period, a unique tolerance level, i.e. the ability to feed in close proximity to each other, without verbally or physically attacking the other species, was observed between the Indian mynas and the house sparrows. The mynas appeared to be tolerant towards the sparrows, but were extremely aggressive towards the other species of birds which visited transect, i.e. jungle babbler, spotted dove, house crow, rock pigeon, and the greater coucal. This particular observation was noted when the mynas interacted with these species outside transect over the course of the study. It was also observed that the sparrows were not tolerated by some species of birds, especially the jungle babblers. This could be because of the large flock size and voracious foraging habits of the sparrow.

During the actual observation, the number of sparrows visiting transect fluctuated from 3 to 15, and no modal value was obtained for the flock size. One possible explanation for this could be the

patches of trees near the experiment site which provided roosting, nesting and shelter for the flock. The number of mynas ( $n = 2$ ) remained constant over the entire duration of the study. When the food source was in excess, i.e. 200 g, both species of birds foraged together at the opposite ends of transect, and took turns to approach the heap of rice grains. There was no aggressive behavior observed between them, i.e. no verbal or physical altercation was recorded between these species. A feeding distance of ~45 cm was maintained by the sparrows. Interestingly, the mynas were tolerant of the sparrows as long as this distance was maintained. For example, if the sparrows landed on the side of transect from where the mynas regularly fed, they were quickly chased away by the mynas. As long as the sparrows stayed on their side of transect, their presence was tolerated by the mynas. The flock size of the sparrows did not make any difference to this tolerance level.

When the amount of food grains was gradually reduced over the weeks, the area of the spread of grains at the centre of the sheet was reduced too. This was carried out to note the behavior of these two species of birds once their feeding distance was reduced. It was observed that as the food source became restricted to smaller areas over the weeks, a new, but smaller feeding distance was established between the two birds. It was the sparrows who played the crucial role in establishing this distance. This was done by a single sparrow, usually female, slowly approaching the feeding area of the mynas, and stopping at the point when the mynas showed even the slightest hint of aggression. The earlier point was then established as the new feeding distance, and adhered to till the feeding area was further reduced.

As the amount of grains and feeding area was reduced further, there came a point when the entire spread of the grains was overshadowed by the large-sized mynas. At this stage, a few of the sparrows, again usually females, took opportunistic pecks at the rice grains from underneath the mynas, and were tolerated by the mynas to a certain extent. The establishment of a new feeding distance was attempted for the first couple of days, but not adhered to. Instead, an exclusive behavior was observed, i.e. the mynas and the sparrows took turns to feed on the little amount of grains that was spread out over a smaller area. Although both the

birds arrived at transect together every morning, the mynas took a quick feed first, and left the sheet and the remaining grains for the sparrows. The sparrows waited for their turn, and then fed on the grains as soon as the mynas had left. Interestingly, this behavior appeared to indicate as if the mynas wanted the sparrows to have a larger share.

#### 4. Discussion

Foraging in a large group offers many advantages to birds, such as predator avoidance, easy access to new feeding sites, and adjustments to gradual/sudden changes in the habitat [16,17]. Such large groups could also consist of individuals who are better adapted to problem solving, due to their age, experience or personality [18–20], and could contribute to the overall success of a group [21].

In our experiment, we observed the ability of the house sparrows to establish a new feeding distance depending on the changing circumstances within its habitat. We were also able to record that there is an established tolerance level between the two birds, which is demarcated by a respected feeding distance, and the sparrows abide by it to avoid any aggression from the Indian mynas. We believe that the sparrows benefit from being in the close proximity of the mynas, i.e. take advantage of the aggression of the mynas towards other species of birds, which would otherwise show hostility towards the sparrows. Feeding among a larger species of bird also offers another advantage to the sparrows, i.e. it can afford to show less vigilance towards potential predators, and utilize more of the time in feeding and other activities. The rice grains were fed on by both the species of birds, yet, there was no competition for the food source, but more of a mutual association between the two species. This association benefits the sparrows, but neither benefits nor harms the mynas.

#### Acknowledgements

We would like to sincerely thank Dr. Sutirth Dey, IISER, Pune, for his generous guidance. This study was self-funded.

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