

Communal roosting behavior of Grey Wagtails in Wayanad, Kerala



Image 1. Grey Wagtail *Motacilla cinerea*. © Akshay Shinde.

Grey Wagtails *Motacilla cinerea* (Image 1) are small, slender insectivorous birds, with the characteristic long and constantly wagging tail. Communal roosting is seen in wagtail species.

Avian communal roosting is a behavior seen in birds where they assemble by nightfall and spend the night together. It benefits the birds in terms of reduced thermoregulation costs, decreased predation risk, and an increase in foraging efficiency. We looked into a fourth benefit that is the migratory factor.

On the evening of 15 February 2020 at 18.20h, a flock of around 50 individuals of Grey Wagtails was observed on a Champaka tree *Magnolia champaca* in Pookode Veterinary University Campus, Wayanad District, Kerala (11.534°N 76.019°E). The campus is surrounded by evergreen, moist deciduous forests, montane grassland, and coffee plantations.

As the Grey Wagtails are solitary and territorial in nature, seeing such a huge flock of them on the same tree made us curious and



Figure 1. The map showing pre, post and roosting areas of Grey Wagtails in Wayanad. (Map Credit: Google Earth).

introduced us to a behavior of them known as communal roosting.

It is a behavior seen in birds, wherein many birds either of the same species or multiple species roost at specific places. Communal roosting of Wagtails with other avian species has been observed in India with Large Pied Wagtails in Kunnathurmedu, Kerala (Praveen 2006) and with Grey Wagtails in Mangalore University campus, Karnataka in southern India (Rodrigues 2019).

After 10 days, on the evening of 25th February, we observed that due to constant chasing by Large-billed Crows *Corvus macrorhynchos* which were roosting in the same

tree, most of the wagtails (30–35 from a total of 50 approximately) had shifted the roosting to an *Erythrina* tree inside Jawahar Navodaya Vidyalaya School Campus, Pookode (11.534°N 76.020°E), which was 50m away from the Champaka tree (first roost tree). The next day, on 26th

February, all the individuals of wagtail were observed to be roosting on the *Erythrina* tree.

At the start of the roost, the wagtails were seen perching on the upper branches that were more open and had less leaf cover (height of the *Erythrina* tree is 18m) but as dusk proceeded, the birds moved towards the lower branches with dense leaf cover, which were at the height of 2–6 m from the ground. Surprisingly, we could spot a Forest Wagtail *Dendronanthus indicus* (Image 2) roosting along with these wagtails. Mixed species communal roosting behavior was observed in other species of wagtails (Gadgil & Ali 1975).



Image 2. A Forest Wagtail *Dendronanthus indicus* was observed to be roosting with the Grey Wagtails. © Pranjali Bhujbal.

All the wagtails were observed to be pre-roosting in the dried marsh grassland area (Image 3) 50m away from the roost tree (*Erythrina*). They started arriving around one hour before the sunset from different directions, alone or in groups of two to three individuals. Pre-roosting activities included preening, foraging, resting, and even slight clashes with the accompanying members.

Some wagtails were observed on the rooftop of a house in school premises (15m away from the roost tree), making it the second pre-roosting site. In around 15 to 20 minutes, most of the wagtails (40–45) gathered on the pre-roosting grounds, and half an hour before the sunset (18.35h) they flew towards the roosting tree.

On cloudy days, we observed that the pre-roosting and roosting were earlier than usual as the roosting behavior is mediated by light intensity where the birds return to the roost when the ambient light has sufficiently dimmed (Ian 1977).



Image 3. The birds would gather at the dried marshland for pre-roosting. © Jeff Francis.

While roosting, more than one individual was observed in the same branch but all of them were resting individually, at a distance of ~20 to 30 cm (Image 4). Huddling among the individuals was not observed.

We observed adult birds (they were classified as adult and juvenile by their size) occupying the interior branches of the roosting tree, mainly secondary and tertiary branches which were closest to the trunk. Communal roosting has demonstrated a hierarchy of sorts where older individuals roost in the interior of the group, decreasing their exposure to predators (Weatherhead 1983) such as Brown-hawk Owl *Ninox*

scutulata, Spot-bellied Eagle-Owl *Bubo nipalensis*, Brown Fish-Owl *Bubo zeylonensis* and Brown Wood-Owl *Strix leptogrammica*, which were frequently sighted in the campus (based on direct observations).

In the morning, the post roosting activity started 15–20 minutes before sunrise (06.20h). The adult birds moved out of the tree first and then juveniles came out later. Wagtails flew out from the tree in flocks of 3–5 individuals; in different directions. They were seen post-roosting on the same rooftop of the house in the school premises and also on the same pre-roosting ground, in small flocks of 10–15 individuals.

Table 1. Roost tree characteristics of Grey Wagtail at Pookode Campus, Wayanad.

Tree species	Tree height (m)	GBH (cm)	No. of primary branches	No. of secondary branches
Champaka (sp) (Roost tree-1)	17	414	2	13
<i>Erythrina</i> (Roost tree 2)	18	148	4	47

GBH—Girth at Breast Height

Table 2. Pre/post roost characteristics of Grey Wagtail at Pookode Campus, Wayanad, Kerala.

Distance from roost trees	Pre/post roosting sites	
	Dry marshland (m)	House rooftop (m)
From Champaka (sp) (Roost tree 1)	35	38
From <i>Erythrina</i> (Roost tree 2)	50	15

Earlier studies suggested the reasons for communal roosting, some being climatic factors (Kendeigh 1969), thermoregulation benefits (Yom-Tov et al. 1977; Du Plessis et al. 1994), information sharing of abundant food locations (Wynne-Edwards 1962) and predation avoidance (Weatherhead 1983; Eiserer 1984).

Since the wagtails were observed to be roosting individually and not forming any huddles, thermoregulation cannot be a factor in this

case. Being a solitary forager, information sharing of the abundance of food resources is meaningless, thus the information hypothesis also

fails to explain this communal roosting behaviour.

Roosting communally helps birds to protect from predation as the detection of the predator becomes easier and it also dilutes individual predation risk (Eiserer 1984). Birds on the edge of the roost provide a buffer from predation to more centrally roosting birds (Weatherhead 1983).

This same scenario was observed in wagtails, where the adult birds were competing for the interior branches in the roost tree, hence predation avoidance can be one of the reasons for communal roosting in grey wagtails.



Image 4. Grey Wagtails roosting in the *Erythrina* tree. © Pranjali Bhujbal.

We observed this communal roosting behavior continuously for a month (from 15 February 2020 to 17 March 2020). This denotes that the site was a wintering ground for these migratory Grey Wagtails. As the Forest Wagtails are also migratory birds, a more plausible reason for the communal roosting might be that it helps them in migration. It might be helping the younger individuals (first-time visitors) to go back to their breeding grounds by following the older/experienced individuals. Further studies on the migration and foraging behavior of Grey Wagtails will shed light on this apart from other factors such as protection, information sharing, or thermoregulation.

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