

Variation in Iris Colouration of the Pin-striped Tit-Babbler *Mixornis gularis* in Peninsular Malaysia

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Introduction

The Pin-striped Tit-Babbler *Mixornis gularis* is common in Peninsular Malaysia and often observed at the forest fringe, at secondary growth and overgrown orchards. The subspecies for Peninsular Malaysia is *M. g. gularis* which extends from north Perak southwards (Wells 2007). Wells (2007) also notes that another subspecies, *M. g. connectens*, extends as far south as at least Perlis. Note however that Birds of the World (Collar & Robson 2020) state that the distribution of *M. g. chersonesophila* is south Thailand and north Peninsular Malaysia, while that of *M. g. gularis* is south Peninsular Malaysia to Sumatra. They give the distribution of *M. g. connectens* as "extreme S Myanmar (S Tenasserim) and adjacent SW, SC and SE Thailand".

On the iris colour in the region Wells (2007) states that "adult iris colour varies with latitude: yellow south at least to Phang Nga, red brown south from Pattani and Perak, mixed in a sample of twelve birds from Trang". This conflicts with Birds of the World (Collar & Robson 2020) that offer an illustration of *M. g. chersonesophila* with a red-brown iris and *M. g. gularis* with a grey-brown iris.

Adults of the subspecies *M. g. gularis* in Peninsular Malaysia generally are observed to have a darker, red-brown iris. This field report, supplemented with an image library assessment, explores the variation of the iris colouration of the Pin-striped Tit-Babbler in Peninsular Malaysia, in particular focusing on the birds with lighter coloured iris.

Field observations and literature search

Observations were made over numerous visits to forest and secondary growth locations in Perak, Peninsular Malaysia, over the past 15 years. Data for Peninsular Malaysia was obtained by an image examination of the Macaulay Library for the region. Only clear images and adult birds were accepted.

It is recognised that there will be some under reporting in this paper as data in the Macaulay Library is influenced by those who post images; not all bird watchers post images hence there will be some observer bias. It was also not always possible to determine if the same bird was imaged more than once (repeat postings). The focus was on identifying the geographical locations where birds with light coloured iris were seen as well as their frequency.

Results

Personal observations of Pin-striped Tit-Babblers in Perak over the past 15 years were reviewed. This included a personal image database of more than 2,000 images of the Pin-striped Tit-Babbler taken from October 2007 to August 2022. All adult birds seen had a dark, red-brown iris (Plate 1) except on five separate occasions where birds with light coloured iris were seen.



Plate 1. Pin-striped Tit-Babbler with a dark, red-brown iris, Ipoh, Perak, 12 Nov 2020

On 03 September 2017, at limestone outcroppings at the outskirts of Ipoh city, a single Pin-striped Tit Babbler with light iris was seen feeding on Australian Mulberry *Pipturus argenteus* fruit.

On 03 July 2018, at the outskirts of Ipoh city, a group of five Pin-striped Tit Babblers comprising 2 juveniles and 3 adults were observed foraging together with the juveniles being fed by the adults. One adult and one juvenile had a light coloured iris.

On 25 July 2019, at the fringes of the Kledang Saiong Forest Reserve (KSFR), Ipoh three Pin-striped Tit Babblers were seen foraging together; one had a light coloured iris (Plate 2).

On 04 October 2019, at a semi-urban part of the city, a pair of Pin-striped Tit Babbler were observed with one having a light coloured iris.

On 21 January 2021, at a fruit farm with secondary growth in Ipoh, a bird with a light coloured iris was seen as part of a social group of four Pin-striped Tit Babblers. They were seen performing a display together, followed by foraging as a group (Plate 3).

In all these observations, the aberrant iris colour was not due to albinism as the plumage was not affected.



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Plate 2. Pin-striped Tit-Babbler with light coloured iris, KSFR, Ipoh, Perak 25 July 2019



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Plate 3. Pin-striped Tit-Babbler displaying, one with light coloured iris, Ipoh, Perak, 21 Jan 2021

There were 275 images posted of Pin-striped Tit-Babblers in the Macaulay Library for Peninsular Malaysia as of 18th September 2022. Two were of a different species of bird, eight were of nests and one of a sonogram, five were of juveniles; these were excluded from analysis.

Of the remaining 259 images 70 were not usable; unclear due to posture or image quality. Of the 189 usable images, 192 birds were available for assessment. Of these, there were 46 (24.3%) birds with a light coloured iris.

Figure 1 shows the distribution of the Pin-striped Tit-Babblers with light and dark coloured irises graphically. Data in table 1 is arranged geographically from north to south and it can be seen that birds with light coloured irises, though not common, have been seen throughout the peninsula.

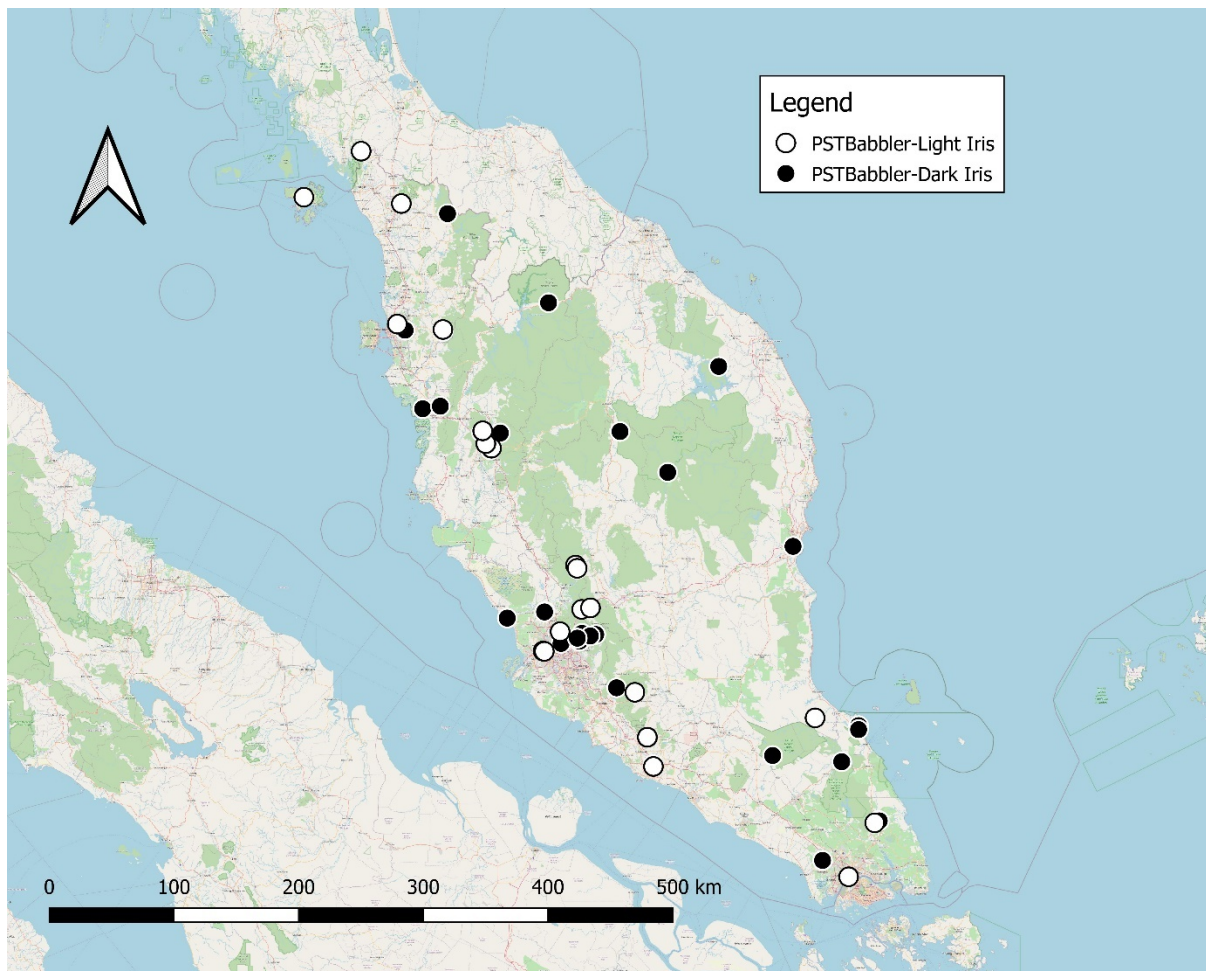


Figure 1: Distribution of Pin-striped Tit-Babblers with light and dark coloured iris in Peninsular Malaysia

Table 1: Images posted of Pin-striped Tit-Babblers in the Macaulay Library for Peninsular Malaysia (as of 18 September 2022)

State	Number of images in Macaulay Library	Number of usable images*	Images of birds with light iris	Images of birds with dark iris	Percentage of birds with light iris by state
Perlis	2	1	1	0	100.0
Kedah	12	10	3	7	30.0
Penang	32	26	4	22	15.4
Perak	50	45	9	38	20.0
Selangor	50	28	9	19	32.1
FT Kuala Lumpur	2	1	0	1	0.0
Negeri Sembilan	54	40	9	32	22.5
Malacca	3	3	1	2	33.3
Terengganu	1	1	0	1	0.0
Pahang	29	17	8	9	47.1
Johor	24	17	2	15	11.8
Total	259	189	46	146	24.3

*Note: Where more than one bird was in the image, both were assessed and counted separately; at times only one of the two birds in the image had a usable iris.

The Macaulay Library database was also accessed to evaluate images for neighbouring nations.

Of 339 images of Pin-striped Tit-Babblers posted for Singapore, 5 were of nest, 1 a juvenile and 123 were unclear (not usable). There were 216 birds assessed in 210 images, of which 39 (18.1%) birds had a light coloured iris.

For Thailand, of 367 images posted, 1 was a drawing, 8 were of a different babbler species, 2 were juveniles and 82 were not usable. There were 275 birds assessed in 274 images. The vast majority of birds, 253 (92.0%) had a light coloured iris. There were no images of birds with a dark coloured iris above the latitude 13.0 degrees. Phetchaburi, just above the Kra Isthmus, is the last Thai province with images of birds with a dark coloured iris. Note that some birds in Thailand have a brighter-yellow iris, occasionally with a reddish hue.

Discussion

There is a limitation in using an image database for evaluation in contrast to a survey. Image lighting and contrast can affect results. However, the light iris colour of these babblers is generally striking enough for certainty. The plumage differences are harder to be sure of and hence were not assessed in this paper. In addition, images of the same bird may be posted more than once; this would apply to both birds with a light or dark coloured iris. I was not able to control for the possibility that photographers singled out pale-eyed birds for special attention. Note that there were birds with iris colours that were not red-brown but more grey-brown; for the purposes of this evaluation, they were coded as dark coloured irises.

This analysis suggests that the iris colour description of Wells (2007) fits in better with the region than that provided by Birds of the World (Collar and Robson 2020).

The data presented here illustrates that for Malaysia and Singapore, and extreme south Thailand, the majority of Pin-striped Tit-Babblers have a dark, red-brown iris. However, a significant minority, around 18-24%, have a light coloured iris. The birds with different iris colouration appear to coexist together in social groups and possibly as breeding partners.

A recent extensive review of eye colour variation in birds by Corbett et al (2022) suggested that intraspecific eye colour variation can be attributed to a variety of reasons including maturity, sex and seasonal changes. They suggest that intraspecific geographic eye colour variation can occur on short evolutionary timescales.

What this difference means in this study is uncertain without suitable genetic studies. It may suggest some colour variation in the same subspecies or that there are birds with intermediate features between northern and southern subspecies (intergrades). This evaluation suggests that there could be a further southward spread of the integration zone in recent decades. The striking nature of the iris differences should make it possible for field observers to notice and report this to offer more data on the occurrence, geographical distribution of this feature and change over time.

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