Notes on sexing Sri Lanka Frogmouth (*Batrachostomus moniliger*) by ventral & front on view in Sri Lanka

Amila Salgado

Introduction.
Sri Lanka Frogmouth (*Batrachostomus moniliger*) is the only Frogmouth species which occurs in Indian subcontinent occurring in Western Ghats in India and Sri Lanka where it is endemic (Grimmet *et al.* 1998, Rasmussen and Anderton 2005). It is sexually dimorphic and the literature after Legge (1880) has depicted overall ground colour of its plumage as main distinction between the sexes with males described in the text and depicted in plates as grey to greyish brown and females brown to rufous (Warakagoda 2001).

Observation & Analysis.
On 19 June 2005, while birding at Nagala temple premises at Bibile on a FOGSL field trip, a day-roost was discovered of a Sri Lanka Frogmouth, 7 feet above the ground inside a dimly-lit thicket. As the light was poor we observed it with the aid of torch light. Everybody except me was convinced that it was a female due to its distinctly tawnier appearance matching closely to the females depicted in field guides available. I was sceptical as I remembered an article by Deepal Warakagoda in CBCN June 2001, which warned of the possible 'pitfalls' when determining the true ground colouration of the Sri Lanka Frogmouths observed through artificial torch light with yellow component as it then appears tawnier or browner than in daylight.

Furthermore, I was also mindful of another important fact resurfaced by Warakagoda (2001), which indicated that certain males look tawnier in ground colour as opposed to their overall grey colour depicted in literature thus resembling very much like female, a fact according to Warakagoda (2001) has been overlooked by all authors after Legge (1880) and Wait (1931). More recent literature such as Rasmussen and Anderton (2005) has shown this long forgotten rufous-brown form of male in text as well as in plate in addition to the grey colour one after attention was originally drawn into it in Warakagoda (2001).

To test the first point, I obtained a few digi-scoped pictures of this roosting Sri Lanka Frogmouth with the aid of torch light with yellow component and one under natural light. In the photographs obtained by me with artificial torch light, the bird appeared tawnier very much like the female form depicted in many Field Guides whereas in the photograph obtained with natural light the bird appeared in its typical greyish overall plumage thus re-confirming the assessment in Warakagoda (2001).

Plate 1

Plate 2

Plate 1 & 2 Sri Lanka Frogmouth *(Batrachostomus moniliger)* male in a day roost at Nagala Temple premises on 19.06.05. Plate 1 is digi-scoped with the aid of torch light with yellow component & Plate 2 with available natural light. Photography by Amila Salgado.

This bird was also photographed by Riza Badurdeen who was present at this observation (Plate 3). Subsequent analysis of his photographs further confirmed that it was in fact a grey colour male as it shows greyish overall ground colour, white barring on the upper tail and whitish lower scapulars; later two features visible only slightly as the bird was facing us at an angle not revealing its dorsal surface all that well. Its tertials, the other important feature of the trio of diagnostic features mentioned in Warakagoda (2001) for positively sexing male Sri Lanka Frogmouth, which is greyish thus appearing paler was obscured due to the angle of its perch. This shows that observers should be careful when sexing Sri Lanka Frogmouth based simply on the ground colour observed through artificial light with yellow component.

Plate 3 Roosting bird at Nagala Temple, Bibile photographed by Riza Badurdeen on 19.06.05.

According to Warakagoda (2001), Cleere & Nurney (1988) and Grimmett *et al*. (1998) mention these three dorsal features among the other pale markings of the male, but do not stress their usefulness as field diagnostics to recognize the male. Rasmussen and Anderton (2005) has shown these dorsal diagnostics of the Sri Lanka Frogmouth in the text as well as in plates after its original announcement by D.Warakagoda in 2001, which should be viewed as valuable addition to our knowledge of this nocturnal sub-continental endemic. According to him, female Sri Lanka Frogmouth generally have a few separate whitish spots on their rufous wing coverts, and occasionally have one or two small whitish spots on the scapulars and they do not have extensive white or grey on the scapulars as do the males. On the underparts of the females, the amount of white spotting is variable, and in some individuals may be as extensive as in a brown male (Warakagoda 2001).

With dorsal diagnostics firmly established, I was interested in finding out whether there are any ventral diagnostics that could be used for sexual identification of Sri Lanka Frogmouth when the only available view is ventral or front on such as in roosting birds as it was not given a mention in literature including Warakagoda 2001. I checked photographs available with me in print and electronically including a few by Gehan de Silva Wijeyeratne of a pair sitting side by side in a roost in Sinharaja World Heritage Site Reserve (hereafter refereed as Sinharaja) discovered by D. Warakagoda in February, 2001 (Plate 4 & 5).

Plate 4

Plate 5

Plate 4 & 5 Sri Lanka Frogmouth roosting pair Photographed by Gehan de Silva Wijeyeratne in February 2001 in Sinharaja.

One of these photographs (Plate 4) shows ventral view of both birds well aiding direct comparison. In these, bird on the right is more rufous-brown and the individual on left is less rufous-brown. Based on dorsal diagnostics of the two birds, Warakagoda (2001) identified the more rufous-brown bird on the right as a female and less rufous brown one on the left as a male and therefore two as a pair with certainty. This male is interesting as it has got a rufous brown ground colouration thus looking remarkably like a female clearly different from greyish male form popularly depicted in Field Guides before Rasmussen and Anderton (2005). It is quite easy that an observer could mistake this rufous-brown male as a female especially if found singly and/or with the dorsal features obscured.

Studying plumage details in the photograph of male Sri Lanka Frogmouth in Plate 4 & 5, I was able diagnose distinct vermiculations especially in belly and undertail and prominent black crown spots. Comparatively, vermiculations were almost absent in the undertail and belly in the female and it contained no black crown spots. Rasmussen and Anderton (2005) describe male Sri Lanka Frogmouth being finely vermiculated and having black-spotted crown and Grimmet *et al*. (1998) mentions males as having irregular black and white markings and vermiculations. Female is described as almost unmarked chestnut in Rasmussen and Anderton (2005) and more uniform than male, and rufous to rufous-brown in colouration in Grimmet *et al*. (1998). However, neither specifically mention about presence of distinct belly and undertail vermiculations in male and absence of such distinct ventral vermiculations in female and usefulness of these distinctions for identifying the sexes ventrally in Sri Lanka Frogmouth.

In addition to the photograph of roosting birds mentioned above, I was able to observe presence of distinct ventral vermiculations and black crown spots consistently in male and absence of them in the females in other Sri Lanka Frogmouth photographs available to me, skins lodged in the National Museum, images available on the web & in direct field observations. However, it should be mentioned that these vermiculations of the male particularly in the belly are diagnosable only at close range. I list these examples below.

Roosting bird at Nagala Temple, Bibile.

Close examination of Plate 3, photographed of the roosting bird in Bibile shows some black crown spotting and undertail vermiculations further confirming its sexual identification as male.

Museum Specimens.
Specimens of Sri Lanka Frogmouth lodged in National Museum of Sri Lanka in Colombo include two males and a female. One of the males is grey (158 B) in overall ground colour and the other is dark brownish grey (158 E) and the female (158 D) is rufous.

Plate 6

Plate 7

Plate 6 Ventral view of one of the males (158 E) at the National Museum of Sri Lanka in Colombo.
Plate 7 Dorsal view of the two males placed in same order as Plate 6 showing dorsal diagnostics clearly.
Plate 8 Crown spotting of the greyish male (158 B).

Plate 8

Both male specimens show distinct belly and undertail vermiculations and the

ventral view of one of them (158 E) is shown in Plate 6. The male with grey overall ground colour (158 B) bears distinct black spots on the crown. In the male shown in Plate 6, (158 E) head is missing. The only available female specimen is in a bad condition its belly plumage is difficult to diagnose. Its undertail is plainer overall and doesn't show distinct vermiculations as in the above two males.

Other photographs.
A brooding male discovered by Rukshan Jayawardene and Namal Kamalgoda in Sinharaja in January 2004, which were digiscoped by Graham Crick and Brian Short, UK while on a birding tour with me (Plate 8 & 9). These clearly show crown spotting and distinct vermiculations on the belly. The ground colour of this male can be described as diffused rufous-brown or greyish-brown.

Plate 9

Plate 10

Plate 8 Sri Lanka Frogmouth brooding male in Sinharaja in January 2004 digi-scoped by Graham Crick, UK showing distinct crown spotting and vermiculations on the belly.
Plate 9 The same bird photographed by Brian Short, UK showing the nest which is covered with bird's down feathers. It also shows the whitish lower scapulars and prominent white barring on uppertail two of the trio of dorsal diagnostic features of the male Sri Lanka Frogmouth.

Images on the web.
I checked the Oriental Bird Images database of www.orientalbirdclub.org the website of Oriental Bird Club, UK where there are several images of Sri Lanka Frogmouth photographed in its range in India and Sri Lanka. One of these includes a Photograph by Craig Robson of a male bird at Gilimale in Sri Lanka in Nov 2003 clearly showing the presence of belly vermiculations. Additionally there are several images that clearly show ventral and front on distinctions of the sexes.

Direct Field Observations.
Since getting interested in sexual identification of Sri Lanka Frogmouth, I was able to observe one or more of these ventral and front on diagnostics in the male Sri Lanka Frogmouth in direct close up field observations done by me during night with the aid of torch light. These include a male Sri Lanka Frogmouth which appeared out from a nest to perch on a branch nearby at dusk in Sinharaja in January 2006 and a male bird observed by several FOGSL members including me at Nagala Temple, Bibile at night during a FOGSL field Trip in March 2006.

Conclusion.
Based on my observations, it is possible to positively determine the sex as male by belly and undertail vermiculations and black crown spots, the latter which is also confirmed in Rasmussen and Anderton 2005. Conversely, absence of the above ventral vermiculations and black crown spots could be used to safely determine the sex as female in Sri Lanka Frogmouth in Sri Lanka. Therefore these ventral diagnostic

features could be used especially when the dorsal area remain obscured especially in roosting birds and when the ground colouration of the males approach that of the females in rufous-brown male forms.

Acknowledgement
I would like to thank Ven. Badullagammana Sumanasara Thero, Chief Monk of Nagala Temple (*Raja Maha Vihara*), Bibile for providing us accommodation and for hospitality extended during FOGSL field trips of 2005 & 2006. I am thankful for Ayanthi Samarajeewa and Dinuka Gunaratne the duo that discovered the day roost after some skilful work, Dr. Newton Jayewardene for acting as the torch bearer & Riza Badurdeen, Graham Crick, Gehan de Silva Wijeyeratne & Brian Short for loaning their excellent photographs for me and Gehan for helpfully lending me the 'Nightjars' book. I am grateful for Prof. Sarath Kotagama for assisting me to obtain permission to examine specimens at the National Museum of Sri Lanka in Colombo and his valuable suggestions for the improvement of this manuscript. Finally, I am thankful for Mr. Gamini Kumara Withana for assisting for examining the skins at the Colombo Museum.

References

Cleere, N & Nurney D. (1998) *Nightjars: A Guide to Nightjars and Related Nightbirds.* Mountsfield, Sussex, UK.: Pica Press.

De Silva Wijeyeratne G, Perera L, William J, Warakagoda D & de Silva Wijeyeratne N. (1997) A *Birdwatcher's Guide to Sri Lanka.* Sandy, UK.: Oriental Bird Club.

De Silva Wijeyeratne, G, Warakagoda D & de Zilva T S U. (2000) *A Photographic Guide to Birds of Sri Lanka*. London: New Holland Publishing (UK) Ltd.

Jayarathna, K.D.T. (2004) Observation on a nest of Sri Lanka Frogmouth *Batrachostomus moniliger. Forktail* No.20:129-130.

Kannan, R. (1993) Recent sightings of the Ceylon Frogmouth in India. *Bull. Oriental Bird Club* 17:36-38. Sandy, UK.: Oriental Bird Club.

Kotagama, S & Fernando, P. (1994) *A Field guide to the birds of Sri Lanka*. Colombo: Wildlife Heritage Trust of Sri Lanka.

Legge, W.V. (1983) *A History of the Birds of Ceylon*. (1983) Second Edition. Dehiwela, Sri Lanka: Tisara Prakasakayo.

Grimmett, R., Inskipp, C. and Inskipp, T. (1998) *Birds of the Indian Subcontinent*. New Delhi, India: Oxford University Press.

Harrison, J & Worfolk, T. (1999) *A Field Guide to the Birds of Sri Lanka*. New York, USA: Oxford University Press.

Henry, G.M. (1998) *A Guide to the birds of Ceylon*. Third edition. KVG de Silva and Sons (Kandy) and Oxford University Press, Kandy, Sri Lanka & New Delhi, India.

Oriental Bird Images Database at *www.orientalbirdclub.org* Sandy, UK.: Oriental Bird Club.

Warakagoda, D. (2001) *Colour variation and identification of the male Ceylon Frogmouth Batrachostomus moniliger, and its daytime incubation*. Ceylon Bird Club Notes 2001: 98-104.

Rasmussen, P.C. and Anderton, J.C. (2005*) Birds of South Asia. The Ripley Guide.* Vols 1 and 2. Smithsonian Institute and Lynx Edicions, Washington, D.C and Barlelona.

Amila Salgado, Wildlife Tour Leader, 146A, Pahala Bomiriya, Kaduwela, Sri Lanka.
Email: amila@sri.lanka.net .