

**SYSTEMATIC STUDY OF A TREE FROG FAMILY  
PELODRYADIDAE (GÜNTHER 1858) (AMPHIBIA: ANURA)  
FROM TANIMBAR ISLANDS, MOLUCCAS**

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**ANIMAL BIOSCIENCE STUDY PROGRAM  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
BOGOR AGRICULTURAL UNIVERSITY  
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Bogor, January 2026

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## SUMMARY

NABILAH FATHIMAH KHAIRUNNISA. Systematic Study of A Tree Frog Family Pelodyadidae (Günther 1858) (Amphibia: Anura) from Tanimbar Islands, Moluccas. Supervised by ACHMAD FARAJALLAH and AMIR HAMIDY

Pelodyadidae is a family known as the Australian Tree Frog, which has a wide distribution in the eastern region of Indonesia and Australia. *Colleeneremia capitula* was the only species from this family that was described at Tanimbar Islands, Moluccas, Indonesia. The separation and isolation from the adjacent islands may have led to diversification and speciation within the genus. Since the early description of this species and the subsequent molecular studies in 2025, no additional information has been published regarding its morphology. There is also no information about the sympatric species of Pelodyadidae on this islands.

In this study, we redescribe *Colleeneremia capitula* and describe an unidentified species based on specimens from the Museum Zoologicum Bogoriense (MZB) through morphological characters and molecular data. We observed and measured 44 specimens (29 males and 15 females) of *Colleeneremia capitula* and 31 specimens of an unidentified species, and performed genetic analysis using the 16S rRNA gene.

We recognized the specimens of *Colleeneremia capitula* into two morphotypes based on morphological variation in the coloration, pattern, and especially the color of the iris. Univariate analyses revealed that of the 31 characters, only three were not significant. Principal Component Analysis (PCA) analysis showed clear separation of the morphospacial between these two morphotypes. However, molecular analysis revealed that the genetic divergence among *Colleeneremia capitula* samples ranges from 0 to 1.4%, indicating that they belong to a single species.

We tentatively assigned the unidentified species to the genus *Papuahyla* based on morphological observation. Whereas, molecular analysis revealed that the unidentified species nested within the *Drymomantis* subclade, with genetic divergence within the subclade ranging from 8% to 14%. The limited data from the 16S rRNA gene cannot precisely define the taxonomic position of this species.

From this study, we can conclude that *Colleeneremia capitula* in the Tanimbar Islands is confirmed to be a single species with two clearly distinct variants. The unidentified species was tentatively identified as part of the family Pelodyadidae, specifically as *Papuahyla* sp.

**Keywords:** 16S rRNA gene, frog, morphotypes, taxonomy, Yamdena

## RINGKASAN

NABILAH FATHIMAH KHAIRUNNISA. Studi Sistematika Katak Pohon Famili Pelodyadidae (Günther 1858) (Amphibia: Anura) di Kepulauan Tanimbar, Maluku. Dibimbing oleh ACHMAD FARAJALLAH dan AMIR HAMIDY.

Pelodyadidae adalah famili yang dikenal sebagai Katak Pohon Australia, yang memiliki distribusi luas di Indonesia Timur dan Australia. *Colleeneremia capitula* adalah satu-satunya spesies dari famili ini yang dideskripsikan di Pulau Tanimbar, Maluku, Indonesia. Pemisahan dan isolasi dari pulau sekitarnya mungkin telah menyebabkan diversifikasi dan spesiasi dalam genus tersebut. Sejak deskripsi awal spesies ini, dan studi molekuler selanjutnya pada tahun 2025, belum ada informasi tambahan yang dipublikasikan mengenai morfologinya. Informasi tentang spesies Pelodyadidae lainnya di pulau ini juga belum diketahui.

Dalam penelitian ini, kami mendeskripsikan ulang *Colleeneremia capitula* dan mendeskripsikan spesies yang belum teridentifikasi berdasarkan spesimen dari Museum Zoologi Bogor (MZB) melalui karakter morfologi dan data molekuler. Kami mengamati dan mengukur 44 spesimen (29 jantan dan 15 betina) *Coleeneremia capitula* dan 31 spesimen spesies yang belum teridentifikasi, dan melakukan analisis genetik menggunakan gen 16S rRNA.

Kami mengidentifikasi spesimen *Colleeneremia capitula* menjadi dua morfotipe berdasarkan variasi morfologi pada pewarnaan, pola, dan terutama warna iris. Kami mendeskripsikan spesies yang belum teridentifikasi sebagai *Papuahyla* sp. berdasarkan pengamatan morfologi. Analisis univariat mengungkapkan bahwa dari 31 karakter, hanya tiga yang tidak signifikan. Analisis Komponen Utama (PCA) menunjukkan pemisahan morfospasial yang jelas antara kedua morfotipe ini. Namun, analisis molekuler mengungkapkan bahwa divergensi genetik di antara sampel *Colleeneremia capitula* berkisar antara 0-1,4%, menunjukkan bahwa mereka termasuk dalam satu spesies.

Berdasarkan pengamatan morfologi, kami untuk sementara mengklasifikasikan spesies yang tidak teridentifikasi ini ke dalam genus *Papuahyla*. Sementara itu, analisis molekuler mengungkapkan bahwa spesies yang tidak teridentifikasi ini termasuk dalam subklade *Drymomantis*, dengan divergensi genetik dalam subklade tersebut berkisar antara 8% hingga 14%. Data terbatas dari gen 16S rRNA tidak dapat secara tepat menentukan posisi taksonomi spesies ini.

Dari penelitian ini, kami dapat menyimpulkan bahwa *Colleeneremia capitula* di Pulau Tanimbar dikonfirmasi sebagai satu spesies dengan dua varian yang jelas berbeda. Spesies yang belum teridentifikasi sementara dianggap termasuk dalam famili Pelodyadidae sebagai *Papuahyla* sp.

Kata kunci: gen 16S rRNA, katak, morfotipe, taksonomi, Yamdena



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**NABILAH FATHIMAH KHAIRUNNISA**

Thesis  
as a prerequisite to obtaining a  
Magister of Science degree on  
Animal Biosciences Program

**ANIMAL BIOSCIENCE STUDY PROGRAM  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
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## FOREWORD

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