Diversity and Taxonomy Identification of Edible Wild Mushroom in Local Markets of Chiang Mai and Lamphun

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Abstract

Wild mushroom have been an important source of income for local communities in Northern Thailand and serve as a nutritious food source for forest-dependent people. Beyond their economic value, mushrooms are macrofungi that contribute significantly to forest biodiversity. They play crucial roles in decomposing organic material and recycling nutrient within forest ecosystem. This study aimed to identify the genera of edible wild mushrooms collected from local markets in Chiang Mai and Lamphun province, assess their diversity, examine their ecological roles, and create a distribution map of their reported harvesting locations. Samples was collected between July and August 2025 from various local markets. Morphological characteristics were documented through photographic records, and specimen were dried for preservation and microscopic examination. Wet mount preparations were used to observed microscopic structure and measure spore size. A total of 44 samples representing nine genera were identified. The most frequently recorded genus was *Russula* (17 samples), followed by *Amanita* (6 samples), *Termitomyces* (6 samples), *Lactarius* (4 samples), *Cantharellus* (4 samples), *Boletus* (4 samples). One sample each of *Panus*, *Phlebopus*, and *Tricholoma* was also recorded. Approximately 90% of the identified samples were ectomycorrhizal fungi, indicating their ecological importance through symbiotic association with forest trees. Overall, this study contributes to the existing database of edible wild mushrooms traded in local markets and enhances understanding of their taxonomic diversity, ecological roles, and geographic origins in northern Thailand. The findings support community-based management and forest restoration by identify key edible mushroom genera and their associated forest habitats, thereby promoting sustainable harvesting and ecosystem conservation.

Introduction

- Edible wild mushroom serve as nutritious and sustainable food sources.
- One of major seasonal income for local communities in Northern Thailand.
- Important ecological roles such as saprotrophic, mycorrhizal, parasitic



Figure 1. Roadside mushroom stalls in Chiang Mai

Results

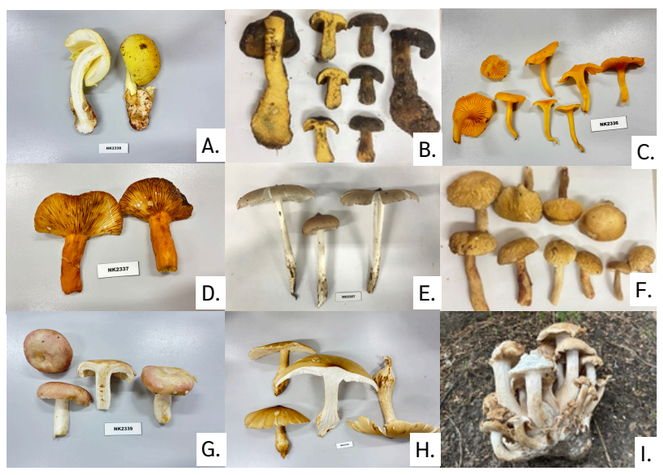


Figure 2. Representative edible wild mushrooms collected in this study: (A) *Amanita* sp., (B) *Boletus* sp., (C) *Cantharellus* sp., (D) *Lactarius* sp., (E) *Panus* sp., (F) *Phlebopus* sp., (G) *Russula* sp., (H) *Termitomyces* sp., and (I) *Tricholoma* sp.

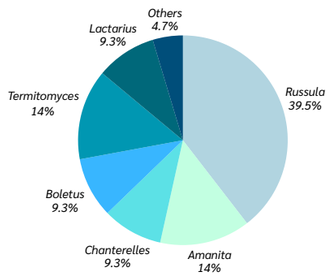


Figure.3. Proportion of Wild Mushrooms in Local Markets: Chiang Mai – Lamphun



Figure 3. Map of reported harvesting locaton and primary harvesting sites of edible wild mushrooms in Chiang Mai and Lamphun local market (Huay Hong Khrai Royal Delevopment Study center and Par Chor, Mae Wang National Park)

Methodology

1



Market survey to collect samples and documented harvesting site reported by sellers

2



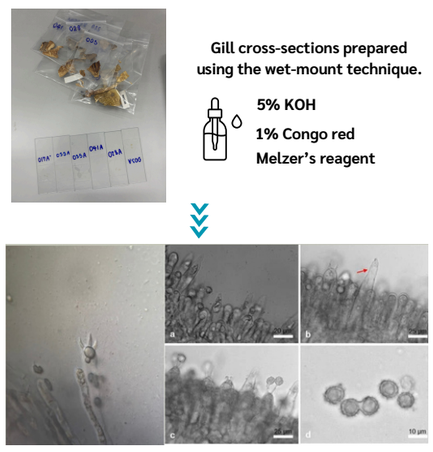
photographing fresh samples

Hot-air drying at 45 °C for 24–48 hours

stored in zip-lock bag

Samples were identified to the genus level using macromorphological characteristics. Samples were photographed and dried for preservation.

3



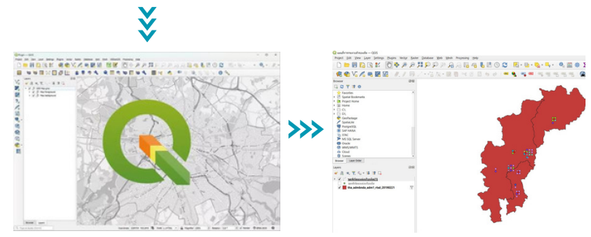
Gill cross-sections prepared using the wet-mount technique.

5% KOH
1% Congo red
Melzer's reagent

Microscopic observation of dried samples to document microscopic structures (basidiospores, basidia, and sterigmata) and measure spore size

4

ลำดับที่	ชื่อสามัญ	Genus	latitude	londtitude	แหล่งที่พบ
1	เห็ดขมิ้น	Cantharellus	18.936134	98.860527	ทุ่งโป่ง แม่ริม
2	เห็ดหล่ม	Russula	14.4383	101.3833	ดอยขิว สันกำแพง
3	เห็ดไข่ห่าน	Amanita	18.8970625	99.2224375	หลังป่อม ห้วยฮ่องไคร้
4	เห็ดห้า	Phlebopus	18.866687	99.133313	บ้านหนองบัว ตำบลเชิงดอย
5	เห็ดโคนหมู่	Termitomyces	18.866687	99.133313	บ้านหนองบัว ตำบลเชิงดอย
6	เห็ดโคนแดง	Termitomyces	18.86595	99.17022	บ้านหนองบัว ตำบลเชิงดอย
7	เห็ดหล่ม	Russula	18.8970625	99.2224375	ป่าห้วยต้นยาง



Distribution map of harvesting sites generated using QGIS based on harvesting locations provided by sellers.

Conclusion

- 9 distinct genera were found among 44 samples from 8 local markets across Chiangmai and Lamphun province and *Russula* is the dominant genus.
- 90% of samples identified as ectomychorrhizal fungi, which play a significant role in forest ecosystems.
- Our primary harvesting site is Huay Hong Khrai Royal Delevopment Study center and Par Chor, Mae Wang National Park. That should be protect for ensure sustainable utilization

Our finding serve as valuable database for biodiversity or conservation research in the future

Reference

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- Anh, C. N., Chi, N. M., Kiet, T. T., Long, P. D., Thuy, P. T. T., Loi, V. V., & Dell, B. (2023). Morphological and molecular identification of an edible Russula mushroom in northeast Vietnam. Journal of Forestry Science and Technology, 15, 50–59.

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