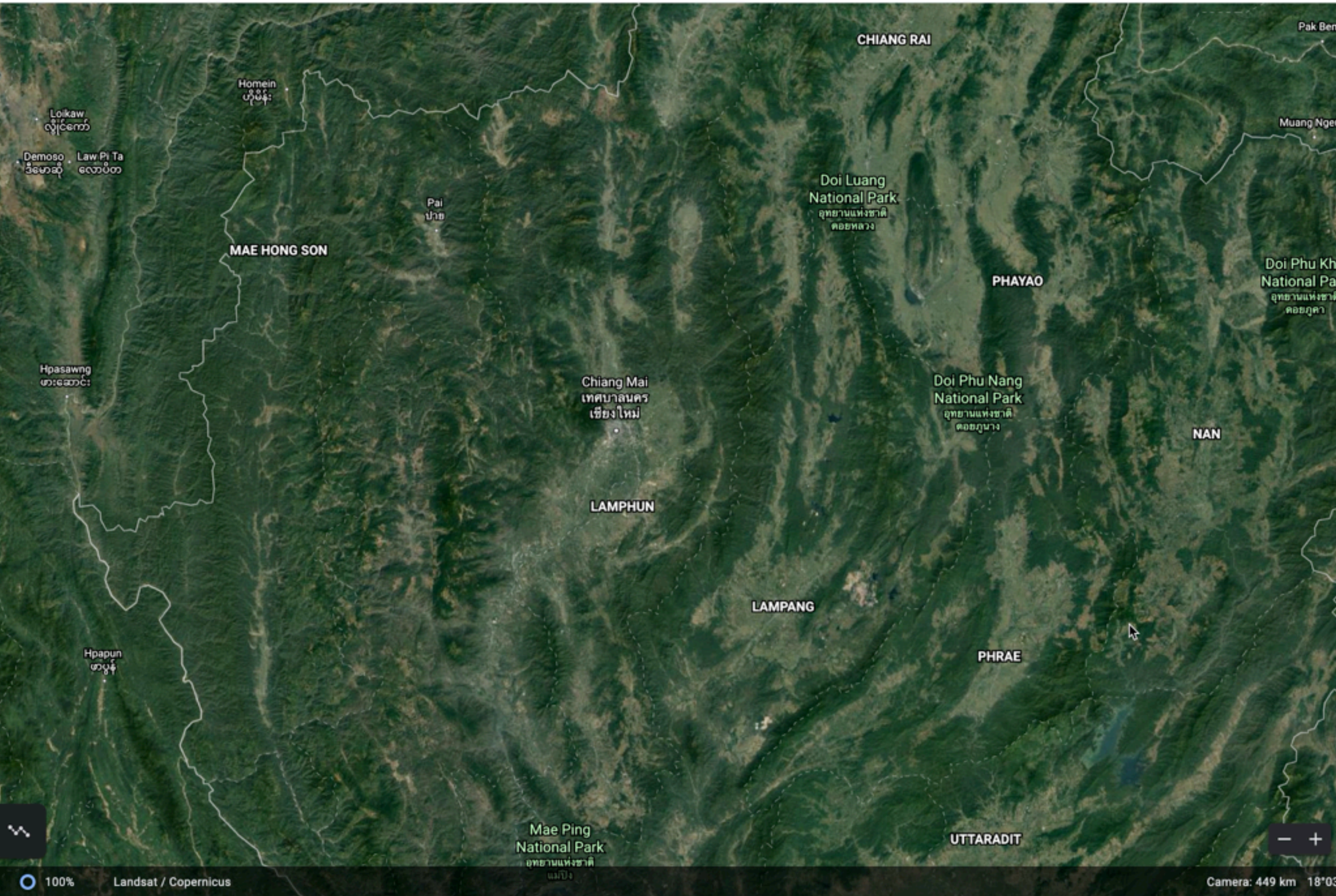
RAINY SEASON, MAY-SEPTEMBER, CHIANG MAI THAILAND

EDIBLE MUSHROOMS OF THE LANNA KINGDOM

WHERE (*AND WHAT*) IS THE **LANNA KINGDOM?**

C. 1292AD (C1836 BUDDHIST CALENDAR)


Dhanbad
Dhaka
TROPIC OF CANCER
YUNNAN
GUANGXI ZHUANGZU
Guangzhou
Ranchi
Asansol
Khulna
Yunfu
Jamshedpur
Kolkata (Calcutta)
Chittagong
Mandalay
Nanning
Zhongshan
MYANMAR (BURMA)
Hanoi
Zhanjiang
Haiphong
LAOS
Bhubaneswar
Nay Pyi Taw
HAINAN
Vishakhapatnam
Vientiane
Yangon (Rangoon)
Đà Nang
THAILAND
Bay of Bengal
VIETNAM
CAMBODIA
Phnom Penh
Andaman Sea
Ho Chi Minh City
Gulf of Thailand
George Town
Medan
Kuala Lumpur
MALAYSIA
Singapore
Kuching


CHIANG RAI
Pak Ben
Homein
Loikaw
Demoso
Law Pi Ta
Muang Nge
Doi Luang
National Park
Pai
MAE HONG SON
PHAYAO
Doi Phu Kh
National Pa
Hpasawng
Chiang Mai
เทศบาลนคร
เชียงใหม่
Doi Phu Nang
National Park
NAN
LAMPHUN
LAMPANG
PHRAE
Hpapun
Mae Ping
National Park
UTTARADIT
100%
Landsat / Copernicus
Camera: 449 km

HOW DID I FIND MYSELF IN LANNA?

Well...

2020

HAPPENED

(Bee my tahmahdah)

THE LANNA KINGDOM: CUISINE & CUSTOMS

Lanna Food /= Thai Food

Northern Thai food culture is defined by meals with incredible spreads of several dishes

Influences in Northern Thai cuisine:

- ANCIENT: *Burma*, *Laos*, *Cambodia*, Vietnam, China (Silk Road), Colonizers & Malaysia
- MODERN: Westerners & Global Thais

THAI LANGUAGE PRIMER: COOKING METHODS

Grilling	Ping	Pla ping
Boiling	Tom	Tom Kha Gai
Stir Fry	Phad	Phad Thai
Fry	Thawd	Moo Thawd
Sauté	Khua	Laap Khua
Mash	Tahm	Som Tham
Dried	Haang	Hed Haang

A THAI LANGUAGE PRIMER: EATING

To Eat = “To Have (Rice)” = Ghin Khao

To Drink = “To Have (Water)”= Ghin Nahm

Food/Cuisine = Ahan;

Thai/Lanna Food= Ahan Thai/Muang

Shop/Restaurant = Rahn/Rahn Ahan

Lunch = Ahan Klang Wan (“Food Mid Day”)

(Very) Delicious = Alloy (Mak); Lam (De-eht)

A THAI LANGUAGE PRIMER: MUSHROOMS

Mushroom = Hed

Earthstar "truffles" = Hed Thob (...Popping)

Shiitakes = Hed Hom (...Good Smelling)

Oysters = Hed Nong Fah (...Angel Wing)

"I like mushrooms a lot!" =

Chan chop hed mak, krap!

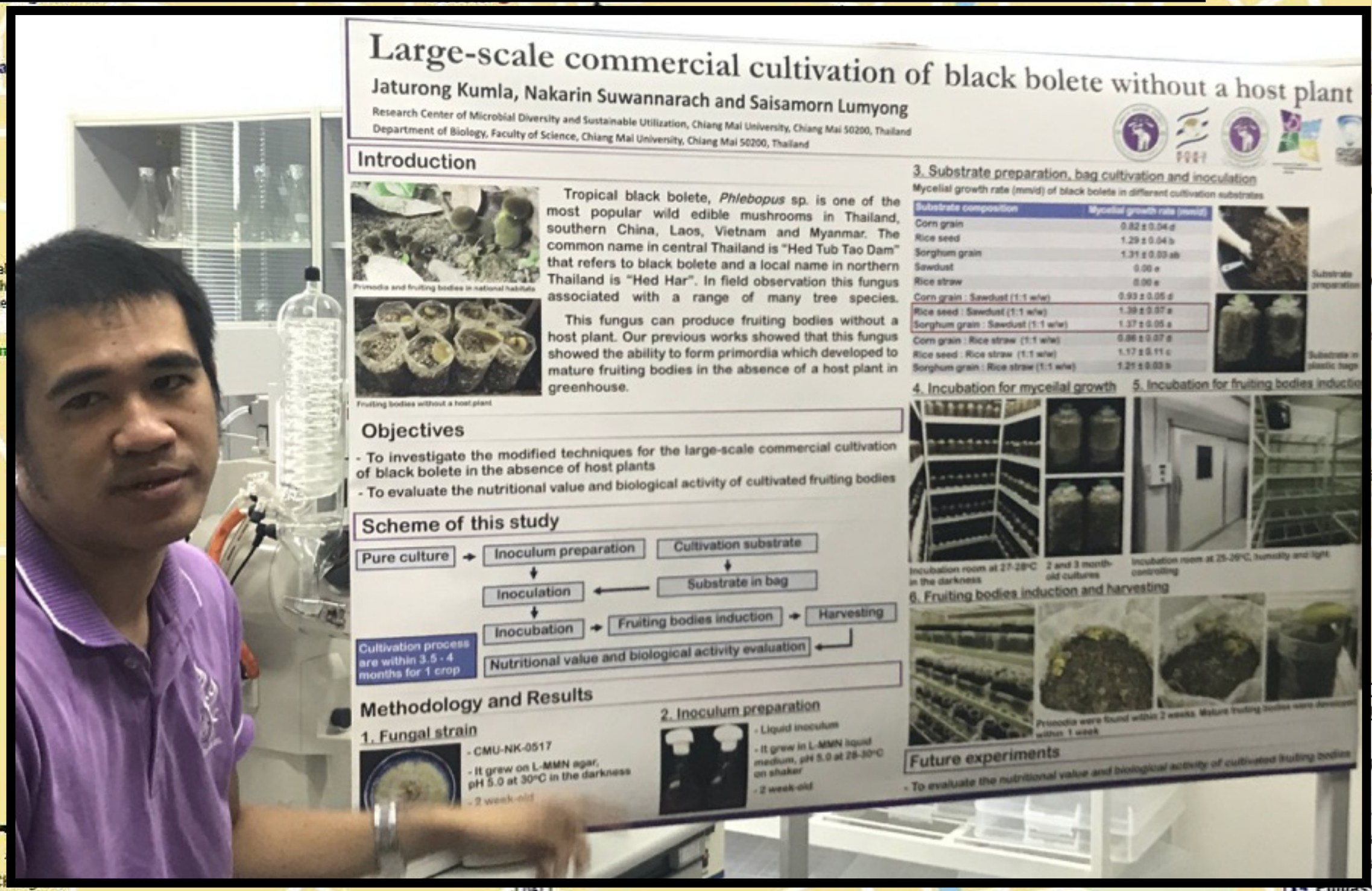
"I want to eat mushrooms!" =

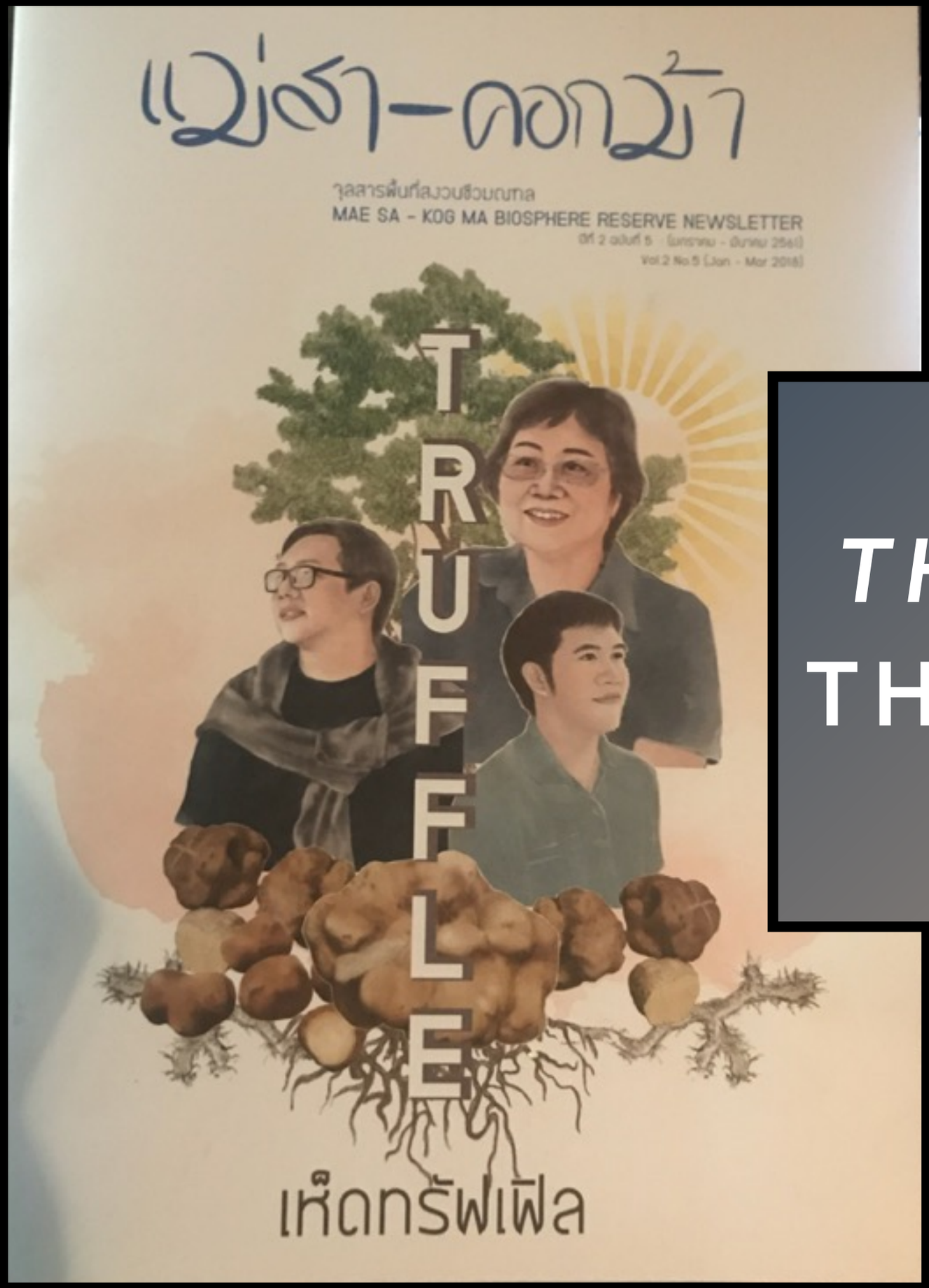
Chan yak ghin hed, krap!

TRACKING EDIBLE FUNGI IN NORTHERN THAILAND

- The Mushroom Research Center;
- Thailand National Parks & Conservation;
- Scholarly articles, mostly from the Universities in Northern Thailand;
- Chiang Mai Univ. Microbial Research Lab

CHIANG MAI UNIVERSITY'S MICROBIAL RESEARCH LAB





TUBER THAILANDICUM

THE THAI WHITE TRUFFLE

เห็ดกินได้

กลุ่มงานกีฏวิทยาและจุลชีววิทยาป่าไม้ สำนักวิจัยการอนุรักษ์ป่าไม้และพันธุ์พืช กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช

เห็ดทุ่งหมู
Russula foetens (Pers.) Pers.

เห็ดหล่มกระเขียว
Russula virescens (Schaeff.) Fr.

เห็ดน้ำแป้ง
Russula alboareolata Hongo

เห็ดหล่มสีกุหลาบ
Russula rosacea
(Pers.) Gray

เห็ดแดงน้ำหมาก
Russula emetica (Schaeff.) Pers.

เห็ดหน้าม่วง
Russula cyanoxantha
(Schaeff.) Fr.

เห็ดฟานน้ำตาลแดง
Lactarius volemus (Fr.) Fr.

เห็ดถ่านใหญ่
Russula nigricans Fr.

เห็ดปอดพรุน
Boletinellus rompelii (Pat. & Rick) Watling

เห็ดถ่านเล็ก
Russula densifolia (Secr.) Gillet

เห็ดหล่มขาว
Russula delica Fr.

เห็ดหล่มเหลือง
Russula flavida Frost

เห็ดฟานสีเหลืองทอง
Lactarius hygrophoroides
Berk. & M.A. Curtis

เห็ดปะการังหวายแฮด
Clavulinopsis miyabeana
(S. Ito) S. Ito

เห็ดสมิด
Boletus griseipurpureus Corner

เห็ดปอดม้า
Heimiella retispora (Pat. & C.F. Baker) Boedijn

เห็ดอัญชัน
Laccaria amethystina (Huds.) Cooke

เห็ดตับเต่าแกล็บแดงคล้ำ
Boletellus emodensis (Berk.) Singer

เห็ดผาะ
Astraeus hygrometricus
(Pers.) Morgan

เห็ดขอบำหมา
Mycoamaranthus cambodgensis
(Pat.) Trappe, S. Lumyong,
P. Lumyong, Sanmee
& Zhu L. Yang

เห็ดรุ้นขาวรูปปะการัง
Tremellodendron pallidum
(Schwein.) Burt

เห็ดขังขนุน/ปะการังเข็มเหลือง
Clavulinopsis fusiformis
(Sowerby) Corner

เห็ดหนอนขาว
Clavaria vermicularis Fr.

เห็ดปะการังแข็ง
Pterula complanata Corner

เห็ดปะการังยอดสีฟ้า
Ramaria cyanocephala
(Berk. & M. A. Curtis) Corner

เห็ดร่างแหกระโปรงยาวสีเหลือง
Dictyophora multicolor
Berk. & Broome

เห็ดร่างแหชั้นขาว
Dictyophora duplicata
(Bosc) E. Fisch.

เห็ดขอนขาว
Lentinus squarrosulus Mont.

เห็ดหัวเข่าก้อนกรวด
Pisolithus tinctorius (Mont.) E. Fisch.

เห็ดฉาวมะพร้าว
Calvatia craniiformis
(Schwein.) Fr.

เห็ดเนื้อร่วน
Psathyrella candolleana

เห็ดไข่เหลือง
Amanita hemibapha
subsp. *javanica* (Berk. & Broome) Sacc.

เห็ดไข่เยี่ยวม้า
Amanita vaginata

เห็ดมันปูน้อย
Cantharellus minor Peck

A COMPREHENSIVE GUIDE TO EDIBLE MUSHROOMS IN THAILAND

- I have been collecting all information on wild edibles in Thailand and have 99 edible mushrooms:

★67 from the previous poster;

★30 from various research papers and websites about edibles;

★4 species from hiking in Doi Pui National Park, not previously found in the literature.

	A	B	C	D	E
1	**Photos** (sources in link on mushroom name)	***Latin Name***	**English Name**	**Thai Name**	**Thai Nam (Thai)**
80		*Russula violeipes*		Hed Na Lae	
81		*Russula virescens*		Hed Lorm (young/ mature)	
82		*Russula xerampelina*		Hed Dang Luang	
83		*Sarcoscypha coccinea*		Hed Gao Dang Lek*	
84		*Schizophyllum commune*	Split Gill	Hed Kheang, Hed Tin Touk Kea	
85		*Strobilomyces seminudus*		Hed Ta Thao	

EDIBLE MUSHROOMS IN LANNA: IN THE MARKETPLACE: CULTIVATED

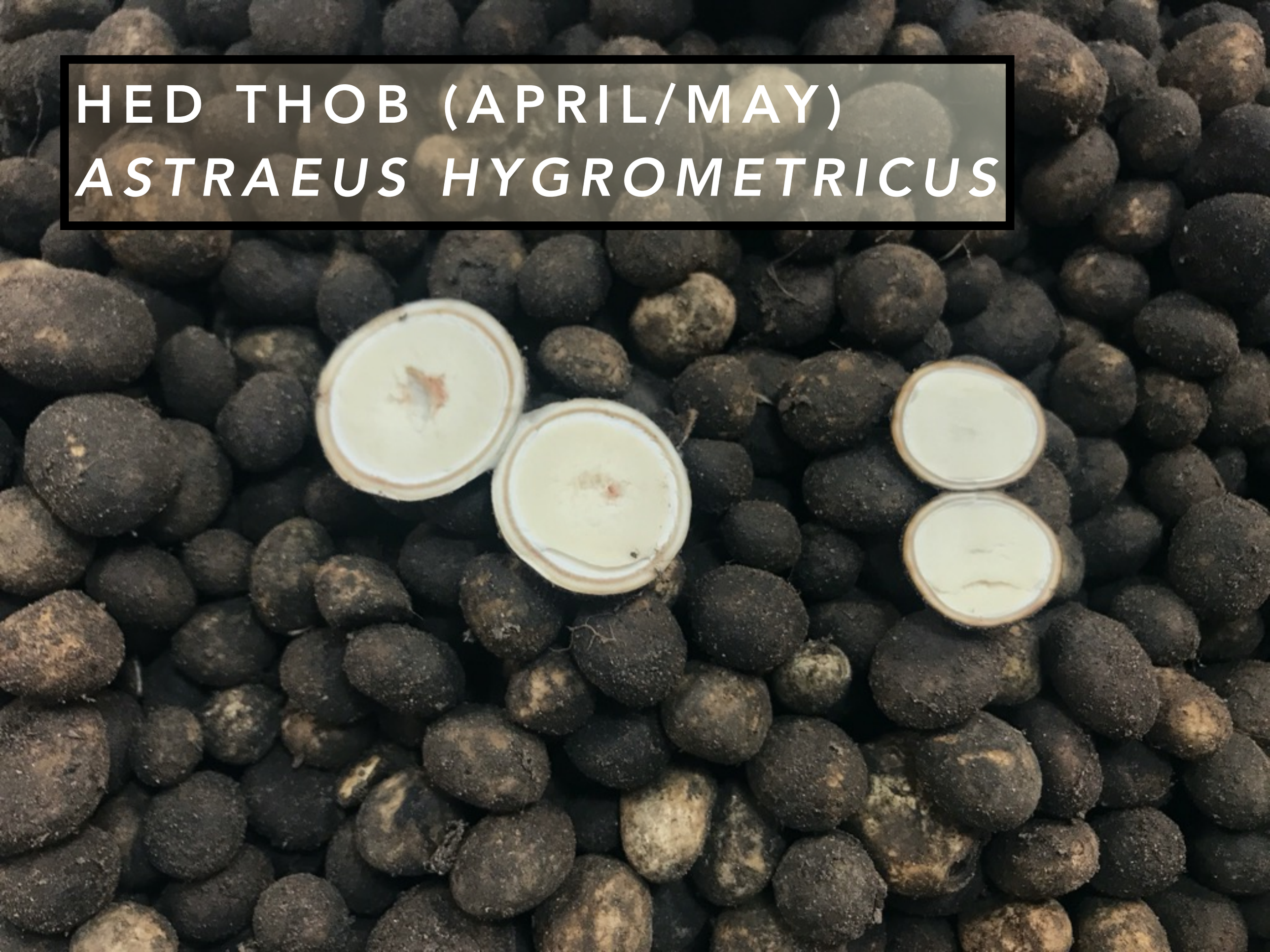
- Hed Hom = Shiitake (*Lentinula edodes*)
  Hed Khem Tong = Enoki (*Flammulina velutipes*)
  Hed Nang Fah = Oyster (*Pleurotus ostreatus*)
  Hed Khaeng = Split Gill (*Schizophyllum commune*)
  Hed Fang = Straw Paddy (*Volvariella volvacea*)
  Hed Hoo Nu = Jelly Ear (*Auricularia auricula*)
  Beech mushroom (*Hypsizygus tessellatus*)
  King Oyster (*Pleurotus eryngii*)

LOCAL MARKET MUSHROOM VENDOR

EDIBLE MUSHROOMS IN LANNA: IN THE MARKETPLACE: FORAGED

Hed Thob = *Astraeus hygrometricus*
Hed Lorm = *Lentinus polychrous*
Hed Kan Kao = *Lentinus squarrosulas*
Hed Har = *Phlebopus portentosus*
Hed Lohm = *Russula virescens*
Hed Kohn = *Termitomyces striatus*
Hed Khai Han = *Amanita hemibapha*
Hed Kamin = *Cantharellus minor*

HED THOB (APRIL/MAY)
ASTRAEUS HYGROMETRICUS



HED HAR JUNE/JULY (PHLEBOPUS PORTENTOSUS

HED KHON (MAY-SEPT)
TERMITOMYCES STRIATUS

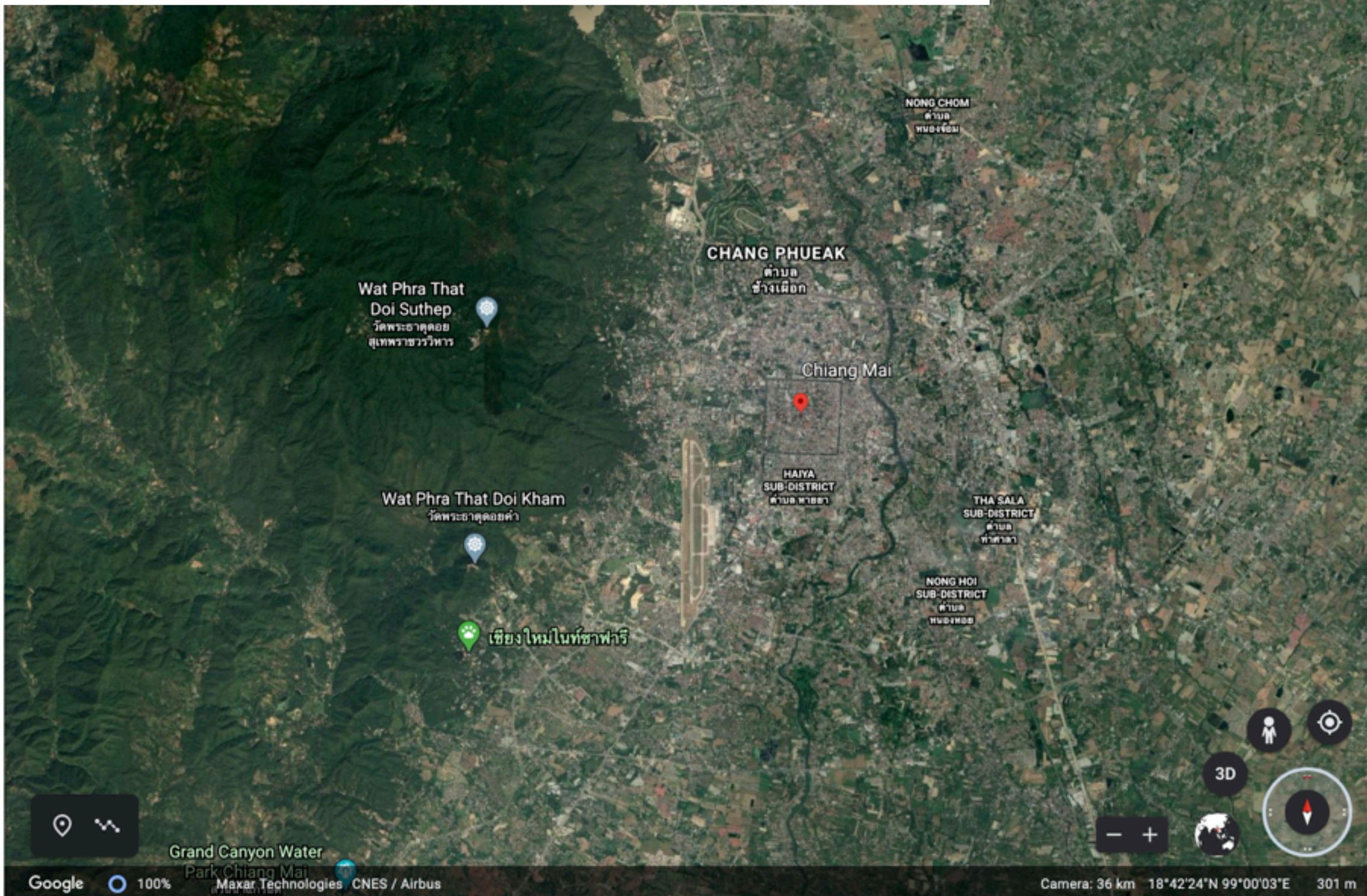
HED LORM (JUN-NOV)
LENTINUS POLYCHROUS

HED KAMIN (AUG-OCT)
CANTHARELLUS MINOR

EDIBLE MUSHROOMS IN LANNA: IN THE WOODS: FORAGED/FOUND

Hedgehog (**Hydnum umbilicatum*)
Hed Khai Hahn (*Amanita hemibapha*)
Beef Steak mushroom (**Fistulina hepatica*)
Reishi Mushroom (*Ganoderma lucidum*)
Split Gill (*Schizophyllum commune*)
Chanterelles Hed Kamin (*Cantharellus minor)*
Giant Puffball (**Calvatia gigantea*)
Unknown Boleteceae (*Tylopilus spp.?*)

DOI PUI NATIONAL PARK CHIANG MAI



DOI PUI NATIONAL PARK
CHIANG MAI

THAI "CAESAR'S AMANITA"
AMANITA HEMIBAPHA

HEDGEHOG MUSHROOM
HYDNUM UMBILICATUM(?)

BEEF STEAK
FISTULINA HEPATICA


HED KAMIN
CANTHARELLUS MINOR

REISHI; HED LIN CHUA
GANODERMA LUCIDUM

GIANT PUFFBALL
CALVATIA GIGANTEA

SPLIT GILL
SCHIZOPHYLLUM COMMUNE

TYLOPILUS SPP.?

EATING MUSHROOMS IN LANNA
PREPARING & COOKING

Curries & soups (Gaeng)
Chili paste: *Nam Prik Hed*
Steamed: eaten w/ *Nam Prik Kha*
Sautéed w/ garlic & chilies
Fermented; known as *Na'am Hed*
Deep Fried: Hed Thawd
Skewered/Grilled: Hed Ping

LANNA STYLE AGRICUTURE:
THE GARDEN AT MY NEW HOME

RECIPES FROM LANNA: NAM PRIK HED

RECIPES FROM LANNA: NA'AM HED

RECIPES FROM LANNA:
CHIANG MAI CURRY PASTE WITH CHANTERELLES

RECIPES FROM LANNA:
CHIANG MAI CURRY PASTE WITH CHANTERELLES

My God, I've never eaten Thai food...

QUARANTINE COOKBOOK, VOLUME 2:

A CHEF'S JOURNEY INTO THE HEART OF LANNA

Zachary Mazi

Volatile composition and sensory profile of Cantharellus cibarius Fr. as affected by

Compound	Common Name	Fresh		Frz Dried		Convection Drying									
						50°C		60°C		70°C		80°C		50°C / 70° C	50°C
1-Octen-3-ol	Matsutake Alcohol	80.2	a	23.3	c	13.2	de	19.2	c	65.3	b	68.8	b	15.7	d	15.7
1-Hexanol	hexyl alcohol	33.4	a	13.7	b	10.5	c	10.1	c	12.8	bc	13.5	b	10.9	c	10.1
2-Octen-1-ol	No Common Name	19.3	a	5.4	c	5.51	bc	3.69	d	6.68	b	6.91	b	5.14	c	6.68
Hexanal	caproaldehyde	16.3	a	9.85	b	4.92	c	3.45	c	8.45	b	8.57	b	7.39	b	6.16
2-(Z)-Octen-1-al		11.1	a	4.61	b	0.26	e	2	d	3.5	c	4	bc	0.62	e	0.41
3-Octanone	ethyl amyl ketone	7.57	a	5.62	b	1.25	e	1.86	d	3.53	c	3.54	c	1.82	d	0.99

ng method: Aroma profile of fresh and dried Cantharellus cibarius

Odor	Flavor	Other Food Sources
Powerful herbaceous, earthy and hay-like Used for lavender and fern notes.	mushroom earthy fungal green oily vegetable umami savory brothy	Thyme, tea leaf, soybean, shrimp, arugula, rosemary, Cooked artichoke, banana, basil, beef, beer, corn husk/silk, hyssop, hyacinth, dill, fish, lavander, leek, lemonbalm, licorice, malt
ethereal fusel oily fruity alcoholic sweet green	pungent ethereal fusel oily fruity alcoholic sweet green	allspice, apple, asparagus, basil flower, bay laurel, celery shoot, cherimoya, ceylon cinnamon, cognac, corn leaf, black currant, elder berry flower, ginger, guava, hyssop, lavender, lovage, cintru oils, bell pepper, rum rose oil, tea leaf, black walnut, watermelon, wine.
green vegetable	fatty oily sweet fruity (Banana, Flower, Grass, Herb); Floral	Ripe banana, grape, mushroom,
fresh green fatty aldehydic grass leafy fruity sweaty	green, woody, vegetative, apple, grassy, citrus and orange with a fresh, lingering aftertaste	Apple, basil, bay laurel, bergamot, butter, cabbage leaf, camphor, carrot, cayenne, celery, cashew nut, clove, corn, cranberry, cucumber, fish, ham, citrus, guava, marjoram, white mustard, oat seed, olive, papaya, bell pepper, potato chips, cooked black rice, roselle calyx, arugula, star fruit, tea leaf, tobacco, tomato, black walnut, watermealon, wheat grass.
		Boiled Duck, Orchids,

International Journal of Food Science +Technology

International Journal of Food Science and Technology 2018

Original article

Nonvolatile taste components, nutritional values, bioactive compounds and antioxidant activities of three wild *Chanterelle* mushrooms

Xiao Li, Yan Guo, Yongliang Zhuang, Yuyue Qin & Liping Sun*

Yunnan Institute of Food Safety, Kunming University of Science and Technology, No. 727 South Jingming Road, Kunming, Yunnan 650500, China

(Received 7 November 2017; Accepted in revised form 26 February 2018)

Summary The chemical compositions, nonvolatile taste components and nutritional compounds of three wild edible *Chanterelle* mushrooms (*C. cibarius Fr* (CcF), *C. cinnabarinus schwein* (CcS) and *C. tubaeformis Fr* (CtF)) were evaluated. Results showed *Chanterelle* mushrooms were good sources of proteins and carbohydrates with low energy. CcS was rich in trehalose in free sugars and glucose in soluble sugars. Monosodium glutamate-like free amino acids and flavour 5′-nucleotides indicated *Chanterelle* mushrooms had good taste. Based on their amino acids compositions and nutrition evaluations, CcF, CcS and CtF were significant sources of amino acids and protein. CtF showed better protein quality than CcF and CcS. Stearic and oleic acids showed high contents in three mushrooms, and higher unsaturated fatty acids were found in CcF. Three mushrooms had high contents of K, Ca and Mg, and low content of Na. Organic acid and phenolic acids of three mushrooms were identified, and antioxidant activities were evaluated.

Keywords Antioxidant activity, *Chanterelle* mushrooms, nonvolatile taste component, nutrition evaluation, phytochemical compounds.

HOW YOU CAN HELP WITH THE DIRTY WORK

MYCOPHAGY:
THE ART AND SCIENCE OF COOKING (AND EATING) MUSHROOMS

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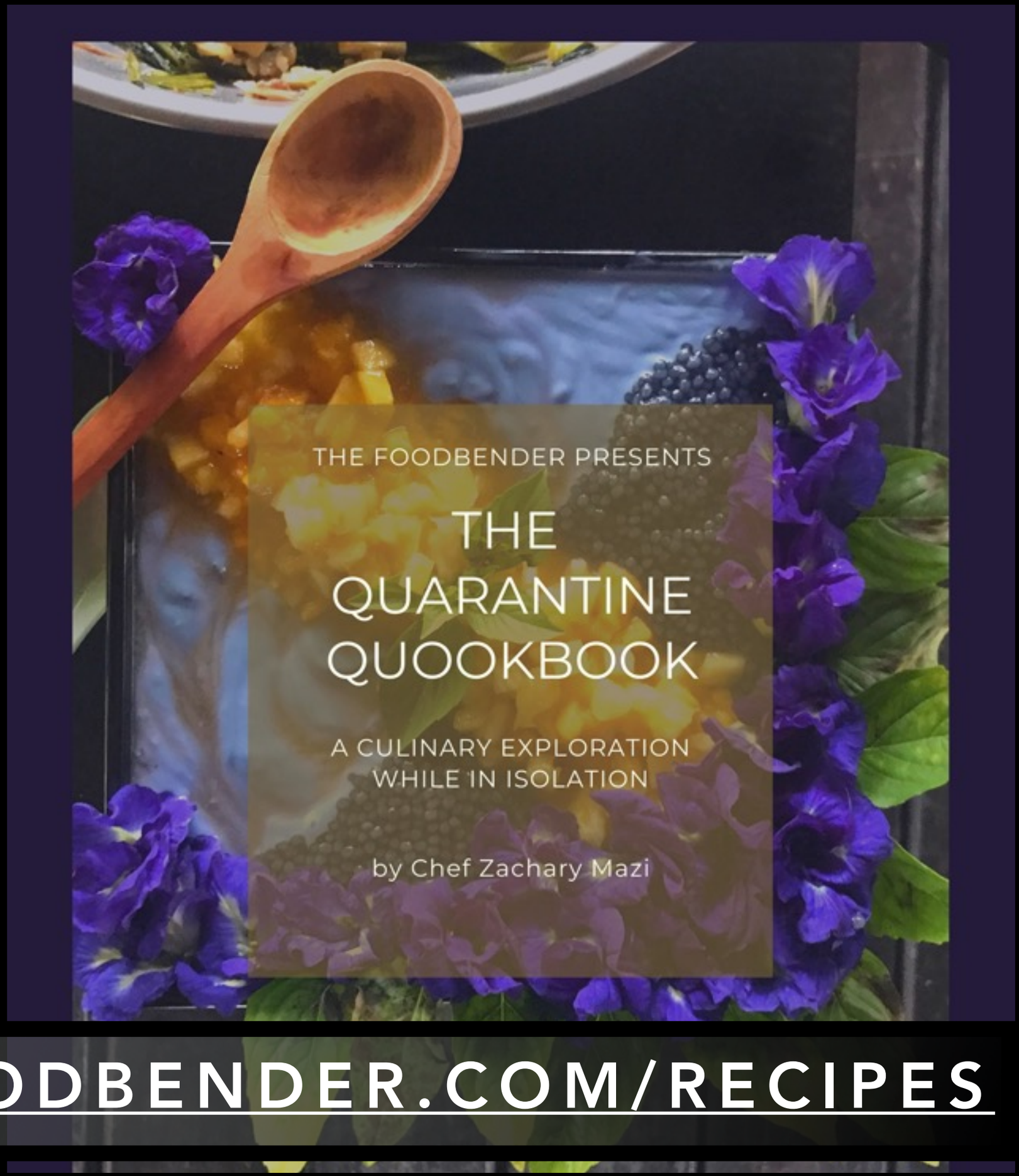

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