

## Form for Dissertation/thesis/diploma/master thesis on WORLD HERITAGE to be sent to UNESCO, wh-info@unesco.org

Name: Mohamad Syahrul Nizam Ibrahim

Surname: Syahrul

Your academic institution: Universiti Putra Malaysia

Street Address of Institution: Universiti Putra Malaysia Bintulu Campus

City: Bintulu

Postal Code: 97008 Country: Malaysia

Institution E-mail: gs56022@student.upm.edu.my

Institution telephone: +6086-855455

**Institution Fax:** +6086-855888

Institution website: <a href="https://btu.upm.edu.my/?L=en">https://btu.upm.edu.my/?L=en</a>

Nationality of author: Malaysian Language of thesis: English

**Title of thesis:** Public Awareness on Biodiversity Conservation and Well-being in

Gunung Mulu National Park, Sarawak, Malaysia

Type of thesis: Ph. D. thesis

Supervisor of thesis: Dr. Suziana Hassan

Institution of Supervisor: Universiti Putra Malaysia

**Address:** Department of Forestry Science, Faculty of Agricultural Science and Forestry, Universiti Putra Malaysia Bintulu Campus, 97008 Bintulu, Sarawak,

Malaysia

Supervisor's e-mail: suzi@upm.edu.my

#### World Heritage/UNESCO resources used:

- UNESCO Archives
- World Heritage Website
- Nomination Files

Date of (foreseen) submission of thesis: 14th September 2022

Publication of thesis: bibliographical references

#### Journal

**Ibrahim, M.S.N.**, Stephen, O. & Hassan, S. (2023). Economic Valuation and Public Awareness towards Environmental Conservation in Niah National Park, Sarawak, Malaysia. Preparing for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K., Mohammad Affandi, S.H. & Hassan, S. (2023). Elucidating Community Wellbeing in Gunung Mulu National Park, Sarawak, Malaysia. Submitted for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K., Mohammad Affandi, S.H. & Hassan, S. (2023). Public Subjective Knowledge on Importance of UNESCO World Heritage Site Status in Gunung Mulu National Park, Sarawak, Malaysia. Submitted for publication.

7, place de Fontenoy 75352 Paris 07 SP, France Tél.: +33 (0)1 45 68 10 00 Fax: +33 (0)1 45 67 16 90 **Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K., Mohammad Affandi, S.H. & Hassan, S. (2023). Revealing Public Knowledge on Threatened Species of Gunung Mulu National Park, Sarawak for Conservation. Submitted for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2022). The Circumstances of Bako National Park in the Midst of COVID-19 Pandemic. Submitted for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2022). An Economic Assessment on Public Well-being for Biodiversity Conservation in Gunung Mulu National Park. Submitted for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2022). Economic Valuation on Environmental Conservation: A Review of Studies in Malaysia. Submitted for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2023). Tourists' Perceptions on Status of UNESCO World Heritage Site: Case of Gunung Mulu National Park. The Malaysian Forester. Accepted for publication.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K., Mohammad Afandi, S.H. & Hassan, S. (2022). Public Awareness on Biodiversity Conservation and Well-being: Case of Gunung Mulu National Park, Sarawak. GeoJournal. https://doi.org/10.1007/s10708-022-10818-x

**Ibrahim, M. S. N.**, Assim, M. I. A., Johari, S., Mohammad, S. K. W., & Hassan, S. (2021). Perception on Penan's Oroo' Language among Local Community at Batu Bungan, Mulu, Sarawak, Malaysia. Iasaýi Ýniversitetiniń Habarshysy, 122(4), 27–36. https://doi.org/10.47526/2021-4/2664-0686.03

**Mohamad Syahrul Nizam, I.**, Mohamad Ibrani Shahrimin, A. A., Shazali, J., Syarifah Kamariah, W. M., & Suziana, H. (2021). Influences of knowledge, attitude, and experience towards biodiversity conservation in Bako National Park, Sarawak, Malaysia. The Malaysian Forester, 84(2), 255-270.

#### Chapter in book

**Ibrahim, M.S.N.**, Md Alwii, N.I. & Hassan, S. (2021). Willingness to pay for biodiversity conservation and well-being in Bako National Park, Sarawak, Malaysia. In: Natural Resources and Biodiversity. Universiti Putra Malaysia Press: Serdang. Accepted for publication.

#### Conference proceedings/ poster presentations

**Ibrahim, M.S.N.** & Hassan, S. (2023). Public Attitude of Biodiversity Conservation at Gunung Mulu National Park, Sarawak, Malaysia. Poster presented at the National Agricultural and Food Engineering Convention (NAFEC), Institut Latihan FAMA, Port Dickson, Negeri Sembilan, Malaysia.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Mat Jusoh, N.H. & Hassan, S. (2023). Knowledge of Biodiversity among Inhabitants and Tourists at Gunung Mulu National Park, Sarawak, Malaysia. Paper presented at the International Conference of Social Sciences and Management (i-Randau), International Youth Center, Kuala Lumpur, Malaysia.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2022). Natural Resources Conservation for Human Well-being: Case of Gunung Mulu National Park, Sarawak, Malaysia. Poster presented at the Congress on Sustainable Agriculture and Food Security (COSAFS2022), the Waterfront Hotel, Kuching, Sarawak, Malaysia. Universiti Putra Malaysia Bintulu Sarawak Campus.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K., Mohammad Affandi, S.H. & Hassan, S. (2022). An Economic Valuation to Conserve a UNESCO World Heritage Site, Gunung Mulu National Park, Sarawak, Malaysia. Paper presented at the 11th Congress of the Asian Association of Environmental and Resource Economics, University of Economic Ho Chi Minh, Vietnam.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2021). Knowledge of Threatened Species among Penan and Berawan Community in Gunung Mulu National Park, Sarawak, Malaysia. In F., Abu Bakar, T.H., Tan, S.D., Ramaiya, M.I., Asmuni, & Y.M., Kwan (Eds.), E-proceeding of the 1st Postgraduate Seminar on Agriculture and Forestry (pp.82-88). Faculty of Agricultural Science and Forestry, Universiti Putra Malaysia Bintulu Sarawak Campus.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2021). Tourists' Perceptions on Status of UNESCO World Heritage Site: Case of Gunung Mulu National Park. Poster presented at the International Conference of Forest Resources Management, Bintulu, Sarawak, Malaysia.

**Mohamad Syahrul, N.I.**, Suziana, H. (2021, June). Public Awareness on Biodiversity Conservation in Bako National Park, Sarawak, Malaysia. Poster session presented at the International Conference on Social Sciences and Humanities, Bintulu, Sarawak, Malaysia. DOI: 10.13140/RG.2.2.25201.43360

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2021). The Challenges of Covid-19 Pandemic on Community Well-Being in Bako National Park, Sarawak, Malaysia. In M.I.S, Adam Assim, Y., Yaacob, S.I., Taasim, R., Alan, N.H., Mat Jusoh, S.L., Chan, A., Rosli, W.F., Lee, W.L., Ko, W.C., Woon, R., & Incham (Eds.), E-proceeding of the International Conference of Social Sciences and Management (i-Randau), Bintulu, Sarawak, Malaysia (pp. 93-99). Faculty of Humanities, Management, and Science, Universiti Putra Malaysia Bintulu Sarawak Campus.

**Ibrahim, M.S.N.**, Adam Assim, M.I.S., Johari, S., Wan Mohammad, S.K. & Hassan, S. (2021). Perception of Penan's Oroo' Language among Local Community at Batu Bungan, Mulu, Sarawak, Malaysia. Paper presented at the 2nd International Conference on Social Sciences and Humanities, Bintulu, Sarawak, Malaysia.

#### Newspaper article

**Ibrahim, M.S.N.** (2022, October 23). Bahasa rahsia masyarakat Penan diancam kepupusan. Berita Harian (Malaysian newspaper), 35. http://digital.nstp.com.my/nst/pageflip/swipe/berberita/20221023berberita#/34/

Date: 25th January 2023

Signature:

# Please provide a 500 words abstract outlining your thesis; you may wish to attach a table of contents or any other relevant material:

Lack of public awareness on the biodiversity conservation is the main cause of the biodiversity loss. This needs to be emphasized by stakeholders in the conservation effort, particularly in some major conservation areas including the UNESCO World Heritage sites of Gunung Mulu National Park (GMNP). As a result of threats such as natural catastrophes, pollution, poaching, and uncontrolled urbanisation or human development, GMNP is at risk of being inscribed on the List of World Heritage in Danger. The UNESCO status is possible to be withdrawn if the criteria of it are not maintained or degraded due to lack of emphasis on awareness of the importance of the site. However, it is still limited information on to what extent is the public aware of the importance of biodiversity conservation in GMNP and its relationship to their well-being. Thus, the study attempted to elucidate the biodiversity conservation awareness among public in GMNP and its relation to public well-being. Specifically, the aim of this study is to examine the level of awareness (knowledge, attitude, and experience) among local community and visitors in GMNP towards biodiversity conservation; to determine the relationship between local community's level of biodiversity conservation awareness and their well-being; and to examine the willingness to pay among local community and visitors for biodiversity conservation in GMNP. A mixed method, concurrent nested strategy was used where the validated questionnaire that distributed to the visitors (n=87) and local community (n=99) through online and face-to-face survey. A personal interview was conducted to the 12 key informants who are professionals, local community, and visitor representative by snowball sampling. Based on the awareness constructs, it was found their level of knowledge and experience is high, while attitude portrays moderate level. The visitors have higher level of knowledge, attitude, and experience than local community. The level of education and number of dependents had influenced their awareness towards conservation. In terms of well-being, the economic and social factors had significantly predicted awareness accordingly. It shows that the neighborhood, life and social relations, services and facilities, education, and culture as well as monthly income influence their current level of awareness of biodiversity conservation. From the study, the estimated mean as compared to current entrance fee which is willingness to pay (WTP) among public was MYR40.61 (USD9.60) per entry and it is highly influenced by their level of attitude and experience. The level of attitude among the respondents has influenced the WTP for the existing park entrance fee. Meanwhile, there is no awareness construct that affects the WTP for increased fees among visitors and the local community. The low level of knowledge and experience of the respondents, but high level of attitude has influenced the good WTP for cheaper park entrance fee. The public WTP also was found to be influenced by environmental and social factors, although the economics did not play a significant role. The empirical study provides insights into developing biodiversity conservation framework for GMNP which emphasize on community psychology as part of social movement towards holistic management in the park.

Keywords: Biodiversity; Knowledge; Attitude; Contingent Valuation Method; UNESCO

### TABLE OF CONTENTS

			Page					
ABSTRACT	Γ		i					
ABSTRAK								
ACKNOWLEDGEMENTS								
		LIVILINIS	5					
APPROVAL			5					
DECLARA			2					
LIST OF TA			5 5 5 5 5					
LIST OF FI		·-	5					
LIST OF A	BBRE	VIATIONS	5					
<b>CHAPTER</b>								
1	INT	RODUCTION						
	1.1	Research background	1					
	1.2	Problem statement	4					
	1.3	Research questions	17					
	1.4	Research objectives	17					
	1.5	Significance of study	18					
	1.6	Operational definitions	19					
	1.7	Organisation of thesis	20					
	1./	Organisation of thesis	20					
2	LIT	ERATURE REVIEW						
2	2.1							
		Knowledge, Attitude, and Practice (KAP) theory	21 24					
	2.2	Public knowledge on species						
	2.3	Gunung Mulu National Park as UNESCO World	25					
	2.4	Heritage Site	26					
	2.4	Community well-being	26 27					
	2.5	Public willingness to pay for conservation in relation						
		to their well-being						
	2.6	Economic valuation of the environment	32 33					
	2.7	Conceptual framework						
	2.8 Summary							
3	ME	THODOLOGY						
	3.1	Mixed methods research design	36					
	3.2	Quantitative approach	38					
		3.2.1 Questionnaire design	38					
		3.2.2 Item validity	42					
		3.2.3 Pilot testing and item reliability	43					
	3.3	Qualitative approach	47					
	0.0	3.3.1 Interview guides development and credibility	47					
	3.4	Ethical consideration and research permit	48					
	3.5	Research area	49					
	5.5	3.5.1 Gunung Mulu National Park Headquarters	51					
		3.5.2 Sungai Melinau Village	52					
		3.5.3 Batu Bungan Village	53					
		C C						
		3.5.4 Long Iman Village	55 57					
		3.5.5 Long Terawan Village	57					

	3.6	Sampl	Sampling technique								
		3.6.1	Local cor	nmunity	59						
		3.6.2	Visitors		61						
		3.6.3	Key infor	rmant selection	63						
	3.7										
		3.7.1	Quantitat	ive data	66						
		3.7.2	Willingne	ess to pay estimation	67						
		3.7.3			68						
		3.7.4	Threatene	ed species identification test	68						
	3.8	Summ		•	70						
4	RES	RESULTS AND DISCUSSION									
	4.1	Data s	creening								
		4.1.1	Reliabilit	y test analysis	71						
		4.1.2	Normalit	y test analysis	72						
	4.2	Socio	Sociodemographic of respondents								
		4.2.1	Profile of	flocal community	74						
		4.2.2	Profile of	visitors	76						
	4.3	Assess	sment of aw	vareness towards biodiversity	78						
		consei	rvation								
		4.3.1	Responde	ents' level of knowledge	78						
			4.3.1.1	Fundamental knowledge of	78						
			4212	Biodiversity  Very ledge on impacts of	02						
			4.3.1.2	Knowledge on impacts of	82						
			4212	biodiversity degradation	0.4						
		422	4.3.1.3	Knowledge on threatened species	84						
		4.3.2	-	ents' level of attitude	88						
		4.3.3		ents' level of experience/ practices	91						
		4.3.4	and visite	awareness between local community ors	93						
		4.3.5									
		4.3.6	Relations	hip between sociodemographic and	95						
			awarenes	s							
			4.3.6.1	Regression for predicting KAE construct	96						
			4.3.6.2	Multivariate analysis for overall	99						
				awareness scale							
		4.3.7	Relations well-bein	thip between awareness and public	103						
	4.4	Percep	Perceptions on status of UNESCO World Heritage								
		Site									
	4.5	Public valuation of GMNP									
		4.5.1	Public prowrp	eference for park entrance fees'	113						
		4.5.2	Reasons	for paying and not paying	114						
		4.5.3		nat influence the public WTP for	116						
			each offe	red price							
			4.5.3.1	Determinants of WTPmax	116						
			4.5.3.2		120						
			4.5.3.3		123						
			4.5.3.4	Determinants of WTPc	124						

	ween willingness to pay and well-	128						
		being			130			
	4.7	Comm	Community well-being					
		4.7.1	Locals' p	perspectives on well-being	130			
		4.7.2	Environn	nental dimension	132			
			4.7.2.1	Water pollution	132			
			4.7.2.2	Solid waste	133			
			4.7.2.3	Degradation of wetlands	137			
			4.7.2.4	Extinction of animals and plants	138			
			4.7.2.5	Wildlife threat	140			
		4.7.3 Economic dimension		c dimension	146			
		4.7.4	Social dimension		149			
			4.7.4.1	Culture	151			
			4.7.4.2	Services and facilities	156			
		4.7.5	Authority	y intervention as mediator	157			
			4.7.5.1	Road proposal	158			
			4.7.5.2	The government's assistance in empowering the local economy	161			
			4.7.5.3		162			
5	CONCLUSION							
	5.1	.1 Summary of main findings						
	5.2	5.2 Caveats, recommendations, and policy implications						
REFEREN	CES				172			
APPENDICES								
BIODATA OF STUDENT								