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The Secret Beauty of Pollen & Stingless Bee Revealed

Entrepreneurship Programme To Increase The Income Of The Fishermen Community

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Photo by Mokhtar Ishak

What's Inside?

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A Note from the Editor

Assalamualaikum and good day!

The year 2022 is drawing down its last curtain, lo and behold, the editorial team managed to assemble and finally present to you, our beloved readers another edition of Agrinews loaded with interesting news and exciting stories.

It wouldn't be incorrect to call this newsletter a one-man effort. But then there are all the good women and men in the editorial team that effortlessly enduring countless nights of compiling, sorting and proof-reading the articles in ensuring this newsletter a good read. They deserve the credit. The editorial team is very pleased to receive continues support from our faculty members despite some of whom are still grappling with fitting writing into a frenetic semester while at the same time coping to fulfill the expectations from the ever-demanding stakeholders. Our gracious gratitude goes to all the writers for their precious contributions in giving life to this periodic newsletter.

Writing is hard. Writing productively is a skill and not a genetic gift. Having said that however, everybody can be a good writer if she or he is willing to put up some effort and commitment into coming out with a good narration to a story that can give impact or inspiration to the readers. Everybody has a story to tell. It just needs some good practice and perseverance in transforming the idea or beautiful thought onto a piece of paper.

In this latest issue some of our friends are generous enough to share their interesting research findings, personal stories and life experiences for the benefit and reading pleasure of our readers. Clearly, sharing your story has the potential to help someone else feel less alone and bring out a sense of belonging – a feeling that somehow is slowly disappearing in many workplaces these days. Obviously, everybody is so engrossed and getting more and more intimate with their 5G gadgetries rather than a person next door.

The stories are powerful because they evoke compassion even among strangers. Sharing our stories creates the empathy and the opportunity for others to understand ourselves or each other better. Agrinews is one of the platforms to do so.

So folks, keep up the good work. Keep writing and keep inspiring.

Shamsul Bahri

Prof. Dr. Shamsul Bahri Abd Razak
Editor in Chief

NEVER STOP DOING WHAT YOU LOVE!

THE SECRET BEAUTY OF POLLEN & STINGLESS BEE REVEALED

Zubaidah Abu Hassan, Shamsul Bahri Abdul Razak

"Seeing is believing", as the saying goes. People are always curious to see what something looked like beyond the naked eyes. Under a scanning electron microscope (SEM), the images of the surfaces of any tiny things are possible to be seen in detail. SEM images provide the understanding and evidence of a world we cannot see with the naked eye or with other types of microscopy techniques. SEM employs an accelerated electron beam and a very finely focused electron beam that scans across the surface of the sample. Most entomopalynological (study of pollen on/in insects) studies use a light microscope (LM) for pollen analyses (Jones & Coppedge, 1998). SEM is suitable for examining the pollen that adheres to insects such as stingless bees, as the pollen is much on the proboscis, legs, thorax and head. This is suitable to study the fresh collected Indo-Malayan stingless bees and the soft and fragile ultrastructural morphology of pollen grains in relation to stingless bees. Moreover, low-vacuum scanning electron microscopy (LV-SEM) enables the observation of samples in their natural state and without chemical treatment. The study was done at the ultrastructural level of selected stingless bee species .

One of the interesting ultrastructural features of stingless bees is the characteristic of hairs on their thorax. Stingless bees were found to exhibit between two to five types with different patterns and different ways of distribution of hairs on their thorax (Zubaidah Abu Hassan, 2021). For example, *Geniotrigona spp*. exhibits two types of hairs on

their thorax (Figure 1A), which the first one is thick with a "serrated" margin on both the right and left sides of the hair, while the other one is thin with branching (Figure 1B). *Homotrigona aliceae* exhibits two types of hairs (Figure 2A) viz simple thick hairs of varying sizes while the other type is thin hairs with branches (plumose) (Figures 2B). *Lepidotrigona terminata* exhibits three types of hairs which are thick "serrated" type hairs (thick arrows), "fir" pattern dense plumose (thin arrows) and very short simple hair or tiny scale (dash line arrows). The type, shape, patterns and arrangement of hairs (bristles) on the mesoscutum or thorax is unique to each species. These characteristics of hairs can be used in dichotomous

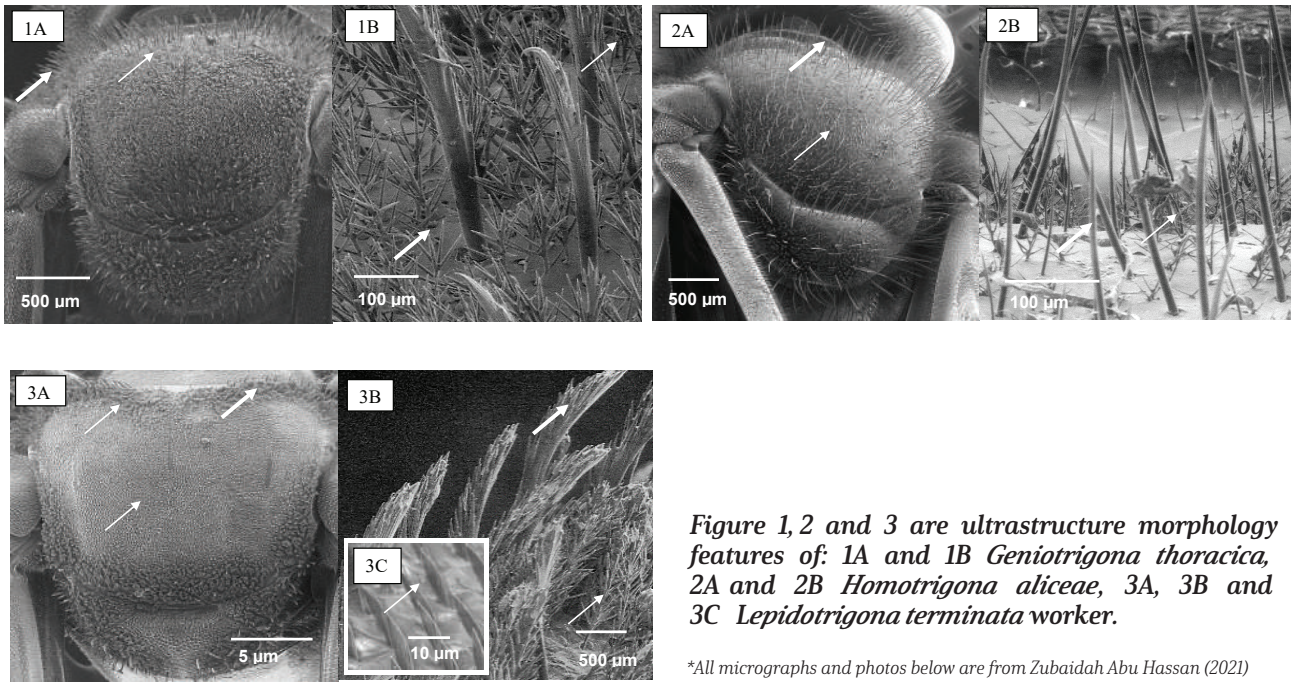


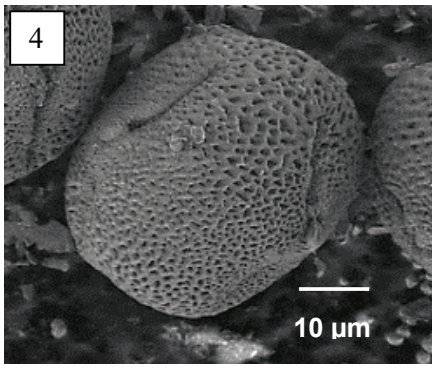
Figure 1, 2 and 3 are ultrastructure morphology features of: 1A and 1B Geniotrigona thoracica, 2A and 2B Homotrigona aliceae, 3A, 3B and 3C Lepidotrigona terminata worker.

**All micrographs and photos below are from Zubaidah Abu Hassan (2021)*

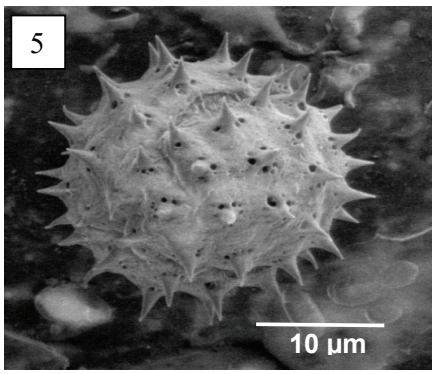
keys for the identification of stingless bees.

Palynologists generally rely on light microscopy (LM) to identify and interpret the pollen. Pollen, a mass of microspores in a seed plant appearing usually as a fine yellow or white dust, but when zoomed in close enough in Scanning Electron Microscope (SEM), each plant pollen species reveals a unique set of characteristics. This unique morphology of pollen is like a fingerprint; it has been used to identify a plant's genus by using a combination of the size, shape and surface pattern of pollen (Kiew and Muid, 1991; Shubharani *et al.*, 2013). Essentially, the pollen's morphological details provide a basis for the identification of plant species (Skvarla et al., 1988; Shubharani *et al.*, 2013; Halbritter *et al.*, 2018).

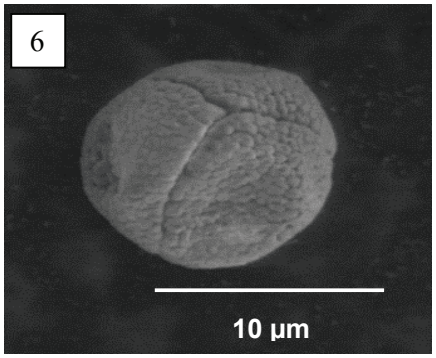
The higher resolution of the SEM revealed the amazing surface ultrastructure morphology of the pollen grains in detail, hence, providing important information for pollen analysis and identification. Pollen from fifty-seven reference flowers around the stingless bees' nests was collected and analysed as references in this study. There were twenty-nine identified species and six unidentified species of pollen collected by stingless bees. Below are the examples of six species of prefered pollens collected by a stingless bee; which are *Antigonon leptopus* (Figure 4), *Biden pilosa* (Figure 5), *Mimosa pudica* (Figure 6), *Hymenocallis littoralis* (Figure 7), *Turnera subulata* (Figure 8), and *Elaeis guineensis* (Figure 9) with the photograph of their flowers. Each of the pollen has unique structures, shapes and morphological characteristics according to its species. All the ultrastructure images of pollens are beautiful such as the hidden beauty secret of the flower.



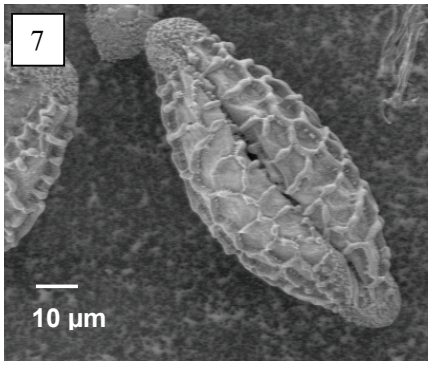
Scientific name: *Antigonon leptopus*
Comman name: Coral vine
Local name: Airmata pengantin Family:
Family: Polygonaceae



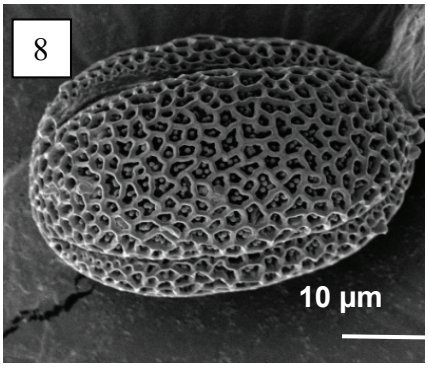
Scientific name: *Biden pilosa*
Common name: Beggar-ticks,
Local name: Bunga Biden pilosa, Bunga ketul,
Family: Asteraceae



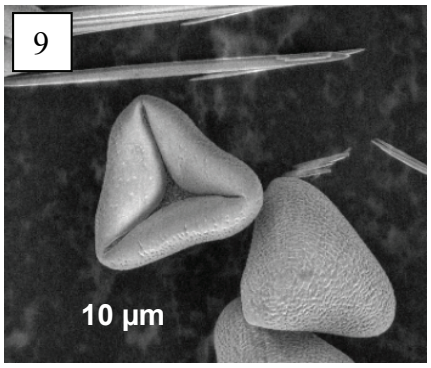
Scientific name: *Mimosa pudica*
Common name: Shameplant
Local name: Semalu
Family: Fabaceae



Scientific name:*Hymenocallis littoralis*
Common name: Beach spider lily Local
name: Lili Labah-labah
Family: Amaryllidaceae



Scientific name:*Turnera subulata*
Common name: white buttercup,sulphur alder
Local name: Bunga Pukul Lapan
Family: Passifloraceae



Scientific name: *Elaeis guineensis*
Common name: Palm oil
Local name: Kelapa sawit
Family: Arecaceae

Figures of six species of favourable pollens by stingless bee; 4. *Antigonon leptopus*; 5. *Biden pilosa*; 6. *Mimosa pudica*; 7. *Hymenocallis littoralis*; 8. *Turnera subulata* and 9.*Elaeis guineensis*.

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Social Return on Investment (SROI) for maximizing social value of university-community engagement

Wan Noorwatie Wan Ibrahim, Mohd Nizam Lani, Nur Nuha Abu Mansur

Universities and communities are inseparable. The statement seems extreme but that is what has happened in the higher education delivery industry from the beginning of the university until now. The involvement of the university plays a significant role as a catalyst for the development of local communities and in turn realizing the sustainable development agenda. In addition, academic institutions have now begun to take into account the element of university-community involvement as the key performance index (KPI) of their respective institutions. This involvement is even more significant when in 2015, the SDGs were introduced and adopted by all United Nations Member States by focusing on 17 goals with 164 targets covering five dimensions; People, Planet, Prosperity, Peace and Partnership. The SDGs will stimulate action in areas of critical importance for humanity and the planet. SDGs also known as the Global Goals to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. To end poverty, the SDGs recommend that it be in line with economic growth and address various social needs including education, health, social protection and employment opportunities while addressing climate change and environmental protection. Sustainable development does not only focus on the social aspect but also takes into account economic and environmental growth factors to ensure a more comprehensive development agenda.

Malaysia is together in achieving this 2030 agenda by allocating a large budget including RM20 million as the start of the Malaysia-SDG Trust Fund or MySDG Trust Fund to coordinate funding from public and private sources more systematically to support programs related to the Sustainable Development Goals (SDGs) (https://www.mof.gov.my/portal/ms/mysdg).The university as a leader of knowledge has played a role at the hand of the government in realizing sustainable development among university citizens and the community. Research and innovation activities, improvement of community living standards and environmental balance are intensified by placing sustainability as key targets. In parallel, the government has channeled many allocations to universities through various programs and projects such as the Knowledge Transfer Program (KTP). From here, the involvement of the university and the community is increasing in completing the activities planned and implemented. This is because many community development programs and projects have been implemented aimed at eradicating poverty. This Knowledge Transfer or Community Education Program can lead to changes in knowledge, attitudes and practices to help the community meet the needs and solve problems faced.

The question is, whether this government expenditure can provide a return (improve the quality of life of the community) on the investment expenditure incurred or at least can expect a return on such investment. This is because this large expenditure requires a commensurate or better return on the community. The evaluation of these of these onvestments need to be done

carefully and use appropriate techniques in order to show the actual performance expected. Economists have developed the methodology of 'cost-benefit analysis' (CBA) to evaluate whether such investment is economically efficient. However, returns to the community are not only explicitly visible but are broader than returns that are not valued in financial terms. Governments may want to know the social value of a community after various programs or projects are implemented for which there is no clear 'price' (Arvidson et. al, 2013). Based on this gap, the social return on investment (SROI) methodology was introduced.

Cost-Benefit Analysis

Traditionally, popular program or project evaluation methods used are ex-ante and ex-post cost and benefit analysis. An ex-ante cost-benefit analysis (CBA) is a process that is used to estimate the costs and benefits of decisions in order to find use for the business, project and public policy decisions (Boardman et al., 2011). Ex-post CBA done after the project is completed is very good to know the true value of a project. However, the two main purposes of the CBA are to determine if the project business case is sound, justifiable and feasible by figuring out if its benefits outweigh costs and to offer a baseline for comparing projects by determining which project's benefits are greater than its costs can show that the priority of the use of CBA is to determine which project should be chosen among alternative and non-specific projects to know the return on investment made on a project.

Return on Investment (ROI)

Economists and financiers in their financial analysis, use return on investment (ROI) indicators to measure the return earned whether positive or negative on money invested in a program or project. ROI analysis is a form of cost-benefit analysis and can be also performed to evaluate the impact of an existing program (https://www.rti.org/). ROI analysis is a powerful tool for measuring the net financial benefits of an investment and is commonly used by business-oriented organizations when evaluating where to spend their resources. However, ROI only focuses on measuring conventionally shaped returns and ignores the implicit benefits that society derives as a result of the investments made. Now, there is a method introduced for the purpose of measuring the financial value generated by an organization through investment in the community known as SROI.

WHAT IS SROI?

Social Return on Investment (SROI) is a concept or an outcomes-based measurement tool for measuring social value creation when evaluating investments by an organisation or stakeholder. It is a new approach to measuring the effectiveness of financial and welfare investment by combining economic and non-economic impacts (Millar & Hall, 2013). It helps organisations to understand and quantify the social, environmental and economic value they are creating (Maldonado & Corbey, 2016). SROI enables organizations to measure how much change is being created by tracking relevant social, environmental, and economic outcomes (Eilís Lawlor et al., 2018). In normal financial analysis, the money gained or lost relative to the money invested is measured by the return-on-investment technique. But, an attempt to measure the financial values created by the organization through the delivery of services to the community is measured by the SROI method. SROI provides information about actual and planned changes and qualitative, quantitative, and financial information on which to base decisions about social service organizations. With SROI, an investment plan contains much more information than just financial projections.

Building on the financial analysis method of return on investment (ROI), the SROI concept is developed to measure the value created, which includes not only individual shareholder profit, but also the benefits for the broader public in the social, economic and environmental spheres (Hamelmann et al., 2017). SROI valuation produces a ratio of benefits to costs or investments (inputs). For example, a ratio of 3:1 indicates that every $1 delivers $3 of social value. To estimate the value of the outcomes, SROI uses financial approximations (proxies), assigning monetary values to represent social, environmental, and economic outcomes that may vary according to the stakeholder. SROI measures change in ways relevant to the people or organizations that experience or contribute to it. SROI analysis help organisations understand and manage three spheres of the value of benefits that they are creating. While SROI is built on the logic of cost-benefit analysis, it is different in that it is designed to measure the comparable accountability and value of organizations whose results cannot always be easily measured in money. CBA is a policy assessment method that quantifies in monetary terms the value of all consequences of a policy to all members of society.

Brief History of SROI

SROI analysis has been a conceptual development since the 1960's. Many trial processes have been undertaken and many academic articles were written about the process since then. The SROI process became fully developed in 2008 when the SROI Network was launched. A methodology for calculating SROI in the context of social enterprise was first documented in 2000 by The Roberts Enterprise Development Fund (REDF) in the USA. The REDF is a philanthropic organisation that provides funding, business connections, and operational expertise to help develop social enterprises that employ those who face greater barriers to employment (http://www.redf.org). They created the initial iteration of SROI as a method to gauge the effectiveness of the initiative's projects they funded. Now, the SROI term is used to help broader communities. In their initial work, the REDF identified three types of value created by social purpose enterprises: economic value, social value and socioeconomic value. Since then, the concept of SROI has undergone several revisions, attracting special attention, particularly in the United Kingdom. The SROI Network there (now Social Value International) contributed significantly to its refinement and tried to give a more comprehensive overview of the social impact of a programme by accounting for not only individual shareholder profit, but also the benefits for the broader public in the social, economic and environmental spheres to different stakeholders (Hamelmann et al., 2017). Now, the SROI method was popularly used by foundations, private investors and philanthropists, government agencies, academics, private social service agencies and other nonprofits working around the world.

How does SROI be measured?

SROI measurements are made by taking into account the socio-economic and environmental impact of the investment, combine with cost-benefit analysis, stakeholder engagement, financial proxies and project improvement. The technique can be used for an entire organization, a project, or a small activity, and almost any kind of sector: profit, not-for-profit, and governmental organizations. Before taking steps to carry out an SROI analysis, the consultant needs to determine what purposes the SROI is measured. An SROI analysis can take many different forms. It can encompass the social value generated by an entire organization, or focus on just one specific aspect of the organization's work. There are two types of SROI analysis:

1. Evaluative analysis – which is based on actual outputs and outcomes that have already taken place or are currently in process;

2. Forecast analysis - which predicts how much financial social value will be created if the activities meet their intended outcomes.

There are six stages in conducting SROI analysis, reflecting a set of seven principles of SROI. This process is recommended in the SROI guide prepared by Social Value UK (2012**).**

Stage 1: Establishing scope and identifying key stakeholders - Distinct limits about what and who will be involved in SROI are decided in this first step.

Stage 2: Mapping project outcomes - An impact map or theory of change that illustrates the connections between inputs, outputs and outcomes are formed by interacting with stakeholders.

Stage 3: Evidencing outcomes and giving them a value - Acquiring data to indicate whether outcomes have occurred. These outcomes are then monetised which means placing a financial value on the outcomes, even for those that do not have a price

Stage 4: Establishing value - After evidence on outcomes is gathered and the outcomes monetised, elements of change that would not have happened anyway (deadweight) or are not a result of other factors (attribution) are then removed.

Stage 5: Calculating the SROI – In this step, all the benefits are added up with the negatives subtracted and compared to the investment.

Stage 6: Reporting, using and embedding - This crucial final step requires reporting findings and recommendations to stakeholders, and inserting good outcome processes within the organisation.

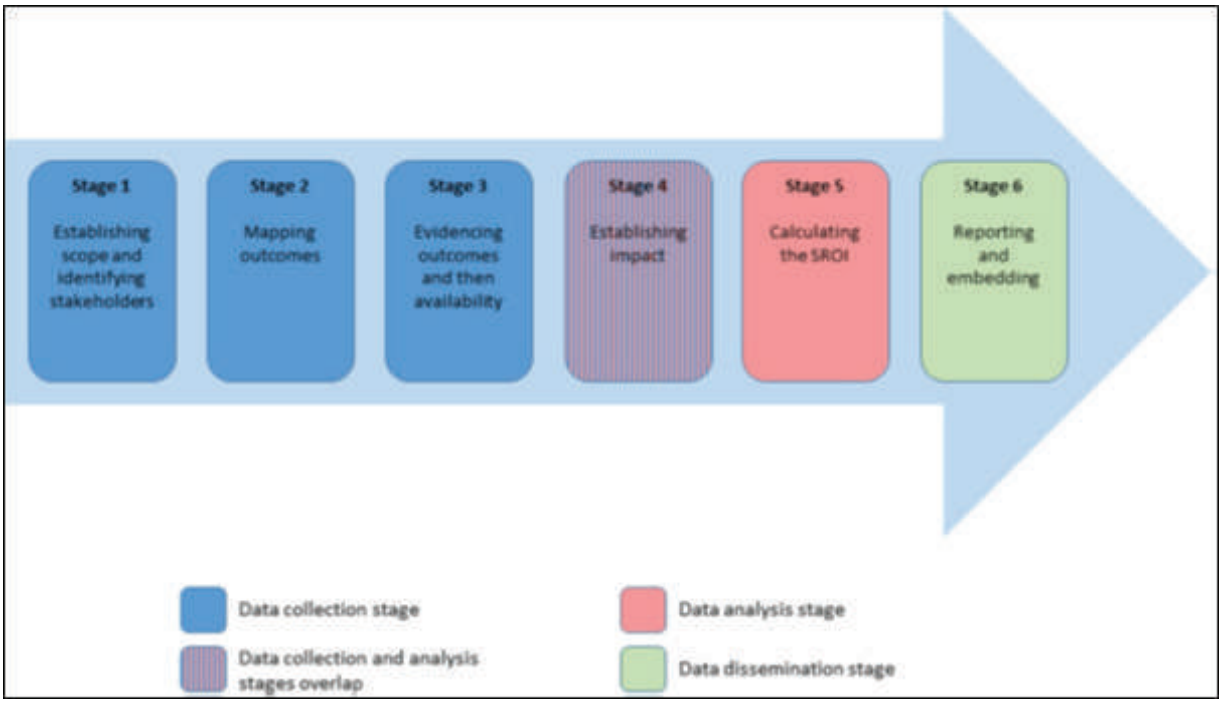

Figure 1. Stage of SROI process (Banke-Thomas et al., 2015)

The seven principles and the application of SROI principles necessitate some judgments. The principles are designed to ensure that the evaluation or implementation process is robust, transparent, and engages stakeholders. The seven principles of SROI can be summarized as follows: :

1. *Involve stakeholders: Any individual or group impacted by a program is a stakeholder. Stakeholders could include an investor who provided an SROI loan or a group that is affected in some way by activity or program. Figure out who the affected are and ensure they are active participants when calculating SROI.*

2. *Understand Change: Figure out how change has occurred through activity or program. This could be a positive or a negative change. Organizations are expected to distinguish between expected and unexpected changes.*

3. *Value the Most Important Things: What distinguishes this method is the principle of assigning financial proxies or monetary values to generated outcomes. It enables organizations to objectively value the outcomes that result from activities.*

4. *Include Material Outcomes: When making these calculations, organizations must include only what is material. Take the time to ask how including or omitting certain information could change the way stakeholders are impacted. If a piece of information would alter the decision-making process, it should be included. This improves both transparency and credibility.*

5. *Avoid Exaggerations:* Transparency is vital in the world of social campaigns. Commit to transparency in the social return on investment calculation process. The easiest way to come up with a transparent conclusion is to ask what would have been different if your organization hadn't taken the action it did. This approach negates the temptation of over-claiming and exaggerating an organization's impact.

6. *Be Transparent:* Transparency must apply across all aspects of the accounting process. This includes tracking, communication, stated goals, prioritized metrics, data collection, and campaign analysis. Again, this all ties into communicating with all stakeholders and involving them in the decision-making process.

7. *Results Verification:* Ensuring credible outcomes demands external verification of results. It's important to show how the organization reached its conclusions and enable stakeholders to independently verify social returns. It's also recommended that organizations utilize the independent assurance process, which enables third-party verification

SROI has many similarities with other approaches which might calculate the financial returns to those public and private projects. However, the SROI model outlines the methodology for calculating value as well as prescribing a set of principles for the framework to ensure that the evaluation or implementation process is robust, transparent, and engages stakeholders.

IMPLEMENTATION OF SROI UNIVERSITY - COMMUNITY IN PROJECT COMMUNICTY IN ENGAGEMENT

Universities have always interacted with their surrounding communities and responded to societal needs. Since the late 20th century, there has been a re-emergence of interest in the societal role played by universities. Known as the "third mission" of higher education, universities should contribute to social and economic development beside focused on on the economic role and impacts

of universities (Farnell, 2020). Nowadays there is a deep interest in measuring the social impact of third sector activities through the SROI method. Following this, five UMT's projects, which are Biofloc technology, Kelulut entrepreneur, SEATRU volunteer programme, empower ECER skills and entrepreneurship programme and UMT Future Scientists were chosen to be adopted with SROI methodological approach whether projects deemed successful based on an SROI analysis can provide the basis for replicability and scaling up, and the ways in which SROI is being used by stakeholders. The collaborative research project initiated by UTM involved UMT, UUM and UPSI partnership to run this research collaboration to measure the impact of community engagement projects. This is because most community projects provide output and impact in non-monetary form, but the impact on the community is enormous. The communities involved are school and university students, entrepreneurs and the B40 community.

This project has identified the value of the impact of SROI on a large community. Of the five projects, two of them have been analyzed and identified the value of SROI, namely the Biofloc Technology Project with a total SROI impact of more than 1 million and the SEATRU volunteer program project worth more than RM217,000.00. The benefits of this SROI assessment are also, high-impact community projects that can be highlighted to external agencies for development are also identified.

CONCLUSION

University-community engagement has provided many benefits to various parties, especially the government and economic development. Engagement can also produce benefits that have indirect, but nevertheless, measurable economic outcomes. The community benefits variously through their productive interactions with the university. These include human and social capital ddevelopment, rapid economic growth, professional and intellectual advancement in the community, as well as progress towards sustainability and research outcomes that can benefit the social, economic, environmental and cultural dimensions of society. Universities also benefit from effective engagement with the communities. Engagement can provide the basis for improved research productivity as partnerships open up new research opportunities and new funding sources. A university's reputation also can be significantly improved through effective engagement. SROI can clearly articulate the benefits of this engagement by producing quality values that can be an indicator of the effectiveness of community-university relationships through university projects that ultimately meet national SDG goals.

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https://www.rti.org/sites/default/files/resources/is-suebrief_3.pdf

Translational Research Grant: Entrepreneurship Programme To Increase The Income Of The Fishermen Community

Nur Aishah binti Awi, Mohd Nizam Lani, Alfian Zein, Zaleha Mohamad, Isma Rosila Ismail, Noorhaslinda Kulub Abdul Rashid, Wan Noorwatie Wan Ibrahim

INTRODUCTION

Fishermen are individuals who carry out activities related to fisheries. They are an important group in contributing seafood supply to the people. They also always get attention from the government, especially in relation to improving living standards. Irregular and low income has affected the living standards of the fishing community. Most of the fishermen's community is among the B40 and has a low level of education. The main source of income for a large number of them is only from fish catches. Various efforts from the government to help increase their income have been done through various programmes. One of the programmes is the entrepreneurship programme.

Entrepreneurship is a field that has great potential to help the fishermen's community improve their standard of living. Through marine catches, various products can be produced, among them are anchovies, dried fish, budu, belacan and even crackers. These products have a high demand and a wide market. Apart from that, there are various other products that can be produced by the fishing community for sale. Therefore, the Product Sales Programme has been implemented by Universiti Malaysia Terengganu (UMT) to help the fishermen community in the Setiu district to increase their income as well as increase self-confidence in the field of entrepreneurship. This activity is one of the programme under Translational Grant, UMT.

FISHERMEN COMMUNITY PROBLEMS

Referring to a study conducted by (Noorhaslindah et al., 2017), the household expenditure of the fishermen community in Setiu exceeds the monthly income of a family. Low incomes, it has burdened them in bearing the expenses of daily living. Furthermore, the rising cost of living now and in the future is also affecting their quality of life.

Apart from that, the income of fishermen is also volatile as their employment depends on various factors such as weather, health and sea conditions. Without a side income and good financial planning, it will most likely disrupt the economic stability of the family.

The fishermen's community has vast business opportunities to generate their side income. The catch from the sea, apart from being sold as final goods to consumers, can also be sold to producers who produce various other processed food products or sold as fertilizer for catches that do not meet the specifications for consumption, which is also in high demand. Apart from that, the fishermen can also process the catch themselves into dried fish, peraman fish and frozen fish. This can help them earn a side income, especially during the monsoon season which makes them unable to go fishing. However, not many fishermen's communities seek additional sources of income through business due to lack of motivation, fear of failure and also not having enough time to manage the business.

FISHERMEN COMMUNITY ENTREPRENEURSHIP PROGRAMME

Concerned with the living situation of the fishermen community in coastal Setiu, UMT has initiated an entrepreneurship programme that aims to increase the income and quality of life of fishermen here. A programme called the Product Sales Programme has been implemented in the fishermen's community in Setiu District where this community is the "focus community" of UMT for various programmes and projects implemented. The programme targets approximately 100 fishermen to participate in product sales conducted by UMT researchers and the Area Fishermen's Association (PNK, Setiu). This programme was conducted from April to May 2021 as part of the engagement with the Setiu fishermen community.

The goal of this programmeme was to increase the income of the Setiu fishermen community and indirectly increase their productivity and socio-economy. The following were the objectives of the programme:

i. fostering an entrepreneurial culture among the Setiu fishermen's community
ii. identify the products of the Setiu fishermen's community
iii. provide income generation opportunities from the sale of products of the Setiu fishermen community.
iv. help the Setiu fishermen community market their products, especially during the monsoon season.

The programme was implemented so that an entrepreneurial culture among the fishermen's community and family members can be nurtured to help them improve their quality of life. Apart from that, the programme can convince them to do business and also more motivated to upgrade their standard of living. This source of side income is very important to them because the fishermen's career is according to the season.

But lately, the weather has been erratic. Fishermen not only face the monsoon season but also face extreme weather.

The main focus of this programme was the fishermen's community of Setiu District. This programme was conducted in collaboration with the Setiu Area Fishermen Association (PNK, Setiu). The local Product Sales Programme lasted for a month and was held four times. Most of the participants sold their products at Bazaar Ramadhan throughout the Setiu district. During this programme, 102 participants were involved exceeding our target of 100 people. During this competition, our researchers interviewed them about their sales during Bazar Ramadhan and we identified the winners, based on the percentage increase in income among the participants.

PROGRAMME RESULTS

Through this programme, various types of community products can be identified. These products have the potential to be marketed everywhere in Malaysia. Table 1 shows the types of products sold by the fishermen's community during the programme:

Table 1: Types of Products sold by the fishermen' community of Setiu District

Product	Product Example
Food	Various cakes Various rice and noodles Banana chips, sweet potatoes and more Terengganu traditional food (glutinous rice, sata and others) Fruits Vegetables
Drinks	Sugarcane Tea, coffee, milo *Nira*
Sea product	Fish Squid Shrimp Crabs Shells Lala Fish crackers Belacan Anchovies and others
Others	Clothes Insecticides

Table 2: Percentage Increase in Income of Setiu District Fishermen Community

Percentage increase in community income	Total Participants
Until 20%	33
21-40%	23
41-60%	16
61-80%	11
81-100%	7
101-240%	12

Table 2 shows the percentage increase in participants 'income after participating in the sales programme. As a result of this programme, all participants were able to increase their sales revenue compared to before. 12 participants managed to increase their income by more than 100%. while the majority of participants managed to increase their income up to 50%. Participants not only managed to increase their sales but also gained business knowledge. A total of 3 participants with the most sales received prizes and were celebrated in a prize-giving ceremony on 14th August 2021. The prizes were delivered by En. Omar Ismail, Chairman of PNK Setiu accompanied by En. Mohd Hazni Hassan, Pengurus Besar PNK Setiu

We also analysed the locality of the participants who participated in this programme. The results are summarised in Figure 1. From this figure, it is shown that the distribution of participants came across different villages in Setiu and most of the participants are outside Setiu. This fact shows the fishermen's communities in Setiu District were active and involved with entrepreneurship during Ramadhan. All the prizes were given to the winners on the 14th August 2021 at Resort Nelayan at Rhu Sepuluh, Setiu. At the same time during the interview, we also learned that some participants were from Besut, which is the next district next to Setiu.

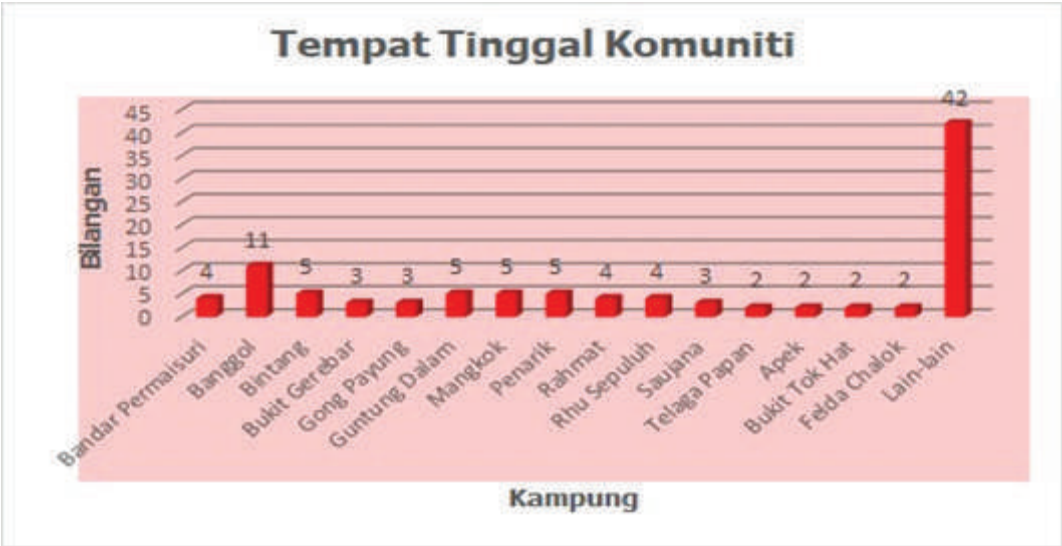

Figure 1: The distribution of participants based on their locality

CONCLUSION

The results of the programme clearly show that the fishermen's community can change their living standards by venturing into various other fields, especially entrepreneurship to earn side income. It is hoped that the assistance provided by the government and others can help the fishermen's community to improve their quality of life. Apart from that, among the next actions and efforts that can be taken is to help the fishermen's community further grow their business through effective promotion and also online sales. This allows them to market their products nationwide while further increasing their sales revenue.

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a. All the winners were standing on the stage
b. The champion of the highest sale during Ramadhan Bazar
c. The First Runner-Up received the prize from En. Omar Ismail, Pengerusi PNK Setiu
d. The Second Runner-Up received the prize at her home due to logistic problem

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The Sweetest Healing Remedy

Zahaitun Mahani Zakariah

INTRODUCTION

The research on the stingless bee honey or known as kelulut in the Malay language is headed by Prof. Dr. Shamsul Bahri Bin Abd Razak who is presently strong-willed research in the Faculty of Fisheries and Food Science (FPSM) in the University Malaysia Terengganu. There are approximately 500 species of identified stingless bee genus that were identified in Latin America, the mainland of Australia, Africa, and Eastern and Southern Asia (Rasmussen and Cameron, 2010). The identified genus of the stingless bee are *Aparatrigona* spp., *Heterotrigona* spp., *Nannotrigona* spp., *Melipona* spp, *Partamona* spp., *Plebeia* spp., *Scaptotrigona* spp., *Scaura* spp., *Tetragonisca* spp., *Trigona* spp. and *Trigonisca* spp. (Souza, et al., 2006; Rasmussen and Cameron, 2010). In a comparison with the apis honey like the Apis mellifera, the stingless bee honey like *Trigona* sp. is identified as possessing higher moisture content, acidity, ash and 5-hydroxymethylfurfural (HMF) but a lower level of total sugars (Shapla et al., 2018). Barakhbah et al. (2007) noted a unique feature of these stingless honey bees which is identified as a bee species which produces honey and absent of stinger. It was reported that Trigona sp. is a predominance in Malaysia (Biluca et al., 2020)

There were many articles about the benefits of this honey in medicine, and pharmacology (Jalil et al., 2017). Recently, it was reported that this honey is consumed for the healing pain due to multiple sclerosis (MS). The MS disease is a devastating chronic autoimmune demyelinating disease of the central nervous system (CNS) in humans (Sallehpour, 2019; Yeung et al., 2019). Recently, the Epstein-Barr virus (EBV) is found to be associated with MS (Bjornevik et al., 2022; Leggett, 2022). A study on 10 million military USA personnel which is led by Stanford Medicine researchers found the virus mimics a protein made in the brain and spinal cord (Page, 2022). Consequently, during the virus infection, the virus leads the immune system to mistakenly attack the body's nerve cells. The EBV spreads mainly via saliva, kissing, or drinking from the same glass. The scientists found that stingless bee honey contains a rare sugar (trehalulose) with a low glycaemic index (GI), and this sugar is not found in any other foods.

Facts about multiple sclerosis (MS)

MS or also known as encephalomyelitis disseminate disease is a common type of demyelinating disease that resulted from a long-lasting condition that affects the brain and spinal cord. This is a disease of the central nervous system characterized by inflammation, demyelination, and neuronal damage (Guan et al., 2019). The National MS Society has confirmed that nearly one million people are living with MS in the United States (https://www.nationalmssociety.org/About-the-Society/MS-Prevalence). The adverse impact of MS causes damage to the myelin sheath of the brain, optic nerves and spinal cord in human beings. The factors underlying the initiation of the disease enter the central nervous system (CNS) from outside the brain (Wekerle, 2022). This inflammatory demyelination causes inflammation in the brain and spinal cord cells which are usually detected using magnetic resonance imaging (MRI) in the hospital. The Epstein-Barr virus is recently identified as the

Table 1: Pain categories due to MS		
1	nociceptive	pain is caused by an injury to body tissues
2	neuropathic	shooting or burning pain
3	psychogenic	a pain disorder associated with psychological factors
4	idiopathic	unknown cause of pain

main cause of MS is that 9 in 10 people worldwide are infected with it (Page, 2022). As a consequence of the disease, the nerve impulses slow or even stop and causing neurological problems.

It was distinguished about five pain categories; namely nociceptive, neuropathic, psychogenic, idiopathic, and mixed due to MS (Truini et al., 2012). The types of pains are elaborated in Table 1. During the pain, MS patients experience neuropathic pain and other pain syndromes which are chronic and paroxysmal (Racke et al., 2022). MS is a putative autoimmune disease of the central nervous system (CNS) and is one of the most common neurological diseases (Sospedra and Martin, 2005). Despite the pain, currently, there is no cure for MS (Gohil, 2015).

Epstein-Barr virus in MS

Some studies stated that autoimmunity is the driving factor for the MS illness, but a minority indicate viral culprits (Wekerle, 2022). This virus was identified or known as Human Herpesvirus 6 by two virologists, namely Anthony Epstein and Yvonne Barr in 1964 (Zhang, 2022). This is a herpes virus that is too common to humans and the indication is fever, fatigue, inflamed throat and rash like swollen lymph nodes in the neck, enlarged spleen and swollen liver (Watson, 2021). Although most people will get infected with EBV in their lifetime, the symptoms are not too serious and painful because it was usually a mild fever (Castellazzi et al., 2010; Farell et al., 2009; Geçgel et al., 2012; Hon et al., 2012). However, there were serious EBV infections among the MS patients which caused paralyse and optic neurotic (Kale, 2016). Harvard T.H. Chan School of Public Health researchers found the progressive MS disease that affects 2.8 million people worldwide is likely caused by EBV infection (Rura, 2022). Besides EBV, the virus causes other types of cancers such as nasopharyngeal cancer, stomach cancer, Hodgkin's lymphoma, and other forms of lymphoma (Zhang, 2022).

The medication which is used to terminate this virus is naproxen, ibuprofen and acetaminophen. Naproxen is a nonsteroidal anti-inflammatory drug (NSAIDs) that is for healing nocturnal fever, general fatigue, pharyngitis and lymphadenopathy after an exacerbation of atopic symptoms or those of allergic rhinitis (Kazama et al., 2016). Medicine like naproxen, ibuprofen and acetaminophen are normally used for reducing inflammation and pain in the body. Hence, these drugs are used for MS treatment as well (Leuschen et al., 2016). Recently, expensive drugs like Fingolimod, Natalizumab, and Rituximab are much used for MS treatment (Luna et al., 2020). In Malaysia, the price of Fingolimod is $302 (RM 1,275.20) per capsule or $9053 (RM 38,226.29) for a supply of 30 capsules (https://www.drugs.com/medical-answers/gilenya-c ost-3538874/).

Leggett et al. (2022) indicated that a study led by Stanford Medicine researchers found that this virus mimics a protein made in the brain and spinal cord, leading the immune system to mistakenly attack the body's nerve cells. This virus infection results in numbness, muscle weakness and severe fatigue in MS patients. The other types of ramifications are lupus and rheumatoid arthritis which are associated with EBV infection.

Conclusion on the Benefits of Stingless Bee Honey for MS.

In medicine, the application of honey to wounds has been widely used since ancient times (Jalil et.al., 2017). Stingless bee honey (SBH) is used in a treatment which is known as apitherapy. The terminology of "apitherapy" is referring to the medical practice of using bee products such as honey, pollen, propolis, royal jelly, and bee venom for disease prevention or treatment proposes (Trumbeckaite, et al., 2015). It was found that the SBH to has therapeutic profiles in terms of its antioxidant, antimicrobial, anti-inflammatory, as well as moisturizing properties (Abd Jalil et al., 2017; Jibril et al., 2020).

Some comparison studies indicated that SBH is better than English bee honey (EBH) because it has beneficial effects as an antimicrobial, and anticancer agent, as well as for improving hypertension and lipid profiles (Pimentel et al., 2022; Zulkhairi Amin et al., 2018). However, although it was noted that apitherapy is not a curable therapy in MS, it still can be used to minimize the clinical symptoms of MS and can be included in MS therapy (Helai et al., 2014; Yaacob et al., 2018; and University of Queensland, 2020).

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TRAILBLAZING GUNUNG LEDANG SEEKING THE ELUSIVE INDO MALAYA STINGLESS BEES

Prof. Dr. Shamsul Bahri Abd Razak

The mystical and majestic Gunung Ledang in Johor has long kept many hidden secrets from the inquisitive eyes of nature explorers and adventure seekers. The legendary warrior Hang Tuah together with the royal entourage once, brazed through the thick jungle of Gunung Ledang to propose to the beautiful princess following an order by the Sultan of Malacca. The legend says that neither Hang Tuah managed to impress the princess nor find any kelulut or its honey to sweeten the bitter journey back to Malacca. Recently on the auspicious date of 4-6 March 2022, a group of local kelulut enthusiasts – forty-four of them to be precise, from all over Malaysia congregated at Gunung Ledang following the footsteps of the braves to find the elusive Indo Malaya Stingless bee that has for many years, perhaps thousands of years living with harmony in the lush greeneries of Gunung Ledang tropical jungle.

The 18th edition of Kelulut expedition was led by Prof. Dr. Shamsul Bahri Abd Razak of the Special Interest Group for Apis and Meliponine Universiti Malaysia Terengganu. He told the press that the expedition was inspired by a 100-year-old-record that he read which reported the abundance of Indo Malaya stingless bees of various species in Gunung Ledang published by the Colonial explorer.

The expedition team was very delighted and elated as their effort in re-mapping the Indo Malaya stingless bee in Gunung Ledang was not futile as they managed to score a record of several beautiful species of the stingless bee in the Indo Malaya clade namely *Tetrigona binghami, Tetrigona melanoleuca, Tetragonula geissleri, Tetragonilla collina* and *Geniotrigona thoracica.*

With this interesting and historical finding, it is everybody's hope that effort in preserving and conserving the beautiful and natural surroundings of Gunung Ledang with its rich biodiversity should be sustained so that our future generations could admire and be inspired by mother nature.


EKSPEDISI KELULUT

COMMUNITY ENGGAGEMENT PROGRAM FOR ASNAF AT KLANA BEACH RESORT, PORT DICKSON, NEGERI SEMBILAN

Prof. Dr. Shamsul Bahri Bin Abd Razak

Early this year, three faculty members eagerly kickstarted the year by traveling to the charming beach of Port Dickson, Negeri Sembilan for a meeting with the local community. They were invited by Majlis Agama Islam Negeri Sembilan (MAINS) to share their expertise in a 3-day Basic Stingless Bee Training Course for the underprivileged group (B40). This specially tailored training course which started from 25-27th January 2022 at Klana Beach Resort Port Dickson was led by Prof. Dr. Shamsul Bahri Bin Abd Razak and supported by Assoc. Prof. Dr. Nur Aida Hashim and Dr. Tuan Zainazor Tuan Chilek.

The program was aimed to give a preview to the participants on the wonderful experience of managing stingless bees to supplement their household income while at the same time giving awareness on the goodness of stingless bee honey for their wellbeing. Throughout the program, participants were exposed to crucial basic skills in the proper handling of the stingless bee colony, troubleshooting any operational issues and harvesting honey according to the Malaysia Standard (MS2683) to ensure the honey harvested was of the highest quality.

Members from Stingless Bee Association of Negeri Sembilan (PATERN9) were also involved in lending their hand by showcasing several unique and rare stingless bee colonies from their collection much to the joy of the participants and the amused onlookers. A demonstration on soap making using honey and propolis as one of the ingredients was also performed by Assoc. Prof. Dr. Nur Aida in between the sessions. A forum that was organised at the end of the program opened up many fundamental issues in stingless beekeeping and was very much appreciated by the participants.

The program was officiated and closed in an orderly manner by Datuk Dr. Sheikh Abd. Aziz Sheik Kadir, the Chairman of MAINS, whowas very instrumental in making himself available throughout the whole three-days program.

Community Engagement in Taman Negara, Pahang

Associate Professor Dr. Nobuyuki Yamaguchi and Professor Dato' Dr. Mohd Tajuddin Abdullah

The Taman Negara National Park is the largest national park in Peninsular Malaysia, as well as one of the world's oldest tropical evergreen rain forests estimated at circa 130 million years old. The park's beautiful nature, landscapes and wildlife attract many tourists both Malaysian and foreigners. However, people may tend to overlook that the beautiful nature and its wildlife also attract the local people. The bird count event at the Taman Negara is unique in Malaysia. It was started by the local community a few years ago, led by Roslan Abu Kassim, Abdul Jalil Abd Rahman, Sabri Abdullah and a few others as the core members, who were interested in wildlife, and it is one of the few such events that have been continuously organised every year by volunteers. It is not only an event for nature lovers but also an excellent opportunity for environmental awareness for the general public. As it has become a popular event, as many as a few hundred people, including school children, were participating in it before the COVID-19 movement control restrictions. Two years ago in 2020 we visited the bird count in March organised by the local community called Bird Group around Taman Negara, in collaboration with the Pahang State Government and Ministry of Tourism, which attracted more than 100 participants including tourists from France, Netherlands, and the USA, and recorded 83 species of birds. This year (2022), thanks to the relaxation of the Covid-related movement restriction, we were again invited to visit the Taman Negara and the bird count event. In comparison to two years ago, it was clear that the tourism activities were greatly reduced (Fig. 1). The reduced tourism activities neither means that the national park staff has substantially reduced duties,

Fig. 1a. The main "port" on the Tembeling River in Kuala Tahan opposite to the Headquarters of the Taman Negara National Park in March 2020 before the covid-related lockdown.

Fig. 1b. The same location in March 2022 – note that the smaller number of boats indicating the reduction of tourism activities.

Fig. 2a. A large tree was fallen and damaged the walking pathway.

Fig. 2b. Materials for repairing damaged walking paths and the canopy walkway were transported to the sites by boats and then on foot.

Fig. 3. A bat of the genus Hipposideros was resting in the cavity of the fallen tree shown in the Fig. 2a.

Photograph by Associate Professor Dr. Nobuyuki Yamaguchi, ITBSD UMT

Fig. 4. Two Orang Asli girls sitting down and watching the forests during the bird counting event.

nor means that the wonderful nature of the Taman Negara has been also reduced. The network of walking paths and the famous Canopy Walk around the national park's Headquarters need appropriate maintenance whether there would be tourism activities or not (Fig. 2). The ever-changing forests may also create microhabitats suitable for some 2 organisms (Fig. 3), and park staffs need to understand them and appropriately manage/protect them. We have a duty to protect this beautiful place and pass it on to the future generation for conserving the planet's biodiversity and for benefitting our children around the Taman Negara National Park as well as the people of Malaysia (Fig. 4). The Universiti Malaysia Terengganu (UMT) has had been involved with the community engagement and transfer of knowledge since 2018. The Bird Group Taman Negara with researchers from the Faculty of Fishery and Food Science and Faculty of Science and Marine Environment, UMT, had published a book entitled, Birds of Tembeling Hornbill Valley, using a fund from KeTSA. The book has positive outcomes at the event, was popular with the nature guides, and had taken by the storm into the recent session of the state assembly in Pahang on 30 March 2022. The BGTN-UMT collaboration is having another book project in the pipeline related to a new tourist attraction near Padang Piol. (Sources: Assoc Prof. Dr. Nobuyuki Yamaguchi nobuyuki.yamaguchi@umt.edu.my; Prof. Taj abdullahmt@gmail.com)

Figure 1: Demonstration on the operating of Thermomixer by Ts. Dr. Fisal

INTRODUCING FOOD PROCESSING TECHNOLOGY KNOWLEDGE TO KUALA KEMAMAN COMMUNITY

Dr. Tuan Zainazor Tuan Chilek & Ts. Dr. Fisal Ahmad

Koperasi Nelayan Kuala Kemaman Berhad (KNKKB) has organised a training programme on production of sambal ikan-based products using Thermomixer machine. This programme aims to provide a specific training in the processing of sambal ikan-based products, thus helping the B-40 group, especially housewives and single mothers to generate their income. A total of ten participants were selected and attended this course. The course was conducted for two days start-ing from February 6, 2022 and to February 7, 2022. The course location was at Hatcheri Belangkas UMT, Kuala Kemaman (HBUKK).

This course was conducted by two lecturers from Faculty of Fisheries and Food Science namely Ts. Dr. Fisal Ahmad (Food processing) and Dr. Tuan Zainazor Tuan Chilek (Food safety). Participants were exposed to the processing of sambal ikan using thermomixer machine and diversifying the use of sambal ikan to prepare various food products based on this sambal ikan. One of the products taught was the processing of local style sushi products. The food safety aspect was also emphasized throughout the course to ensure that the food products produced are clean and safe for consumption.

Figure 2: Sambal ikan was used in preparing of local style sushi (A, B and C)

FOOD SAFETY AND HYGIENE COURSE: TUALANG HONEY

Dr. Tuan Zainazor Tuan Chilek

The Food Safety and Hygiene Course (Tualang honey) was held for two days started from 16 March 2022 until 17 March 2022 at Angullia Beach House, Marang, Terengganu. A total of sixteen participants from East Honey & Herbs Enterprise attended the course. This course was coordinated by three employees of Bioeconomy Corporation (under MAFI).

On the first day, all participants were exposed to six topics related to food hygiene and safety of Tualang honey. Another seven topics were covered on the second day which are focused on the Ministry of Health's (MOH) certification system include HACCP certification. The topics discussed were as below;

- Introduction to food hygiene and safety
- Food safety issues in the honey industry
- Is our honey safe for consumption?
- Honey hunter: Self-preparation
- Harvesting and storage of honey
- Good practices of honey's processing
- Introduction to MOH certification
- Introduction to HACCP
- HACCP: Pre-requisites requirements
- Principle 1: Hazard Analysis and Control Measures
- Principle 2: Determine the critical control points & Principle 3: Establishing critical limits
- Principle 4: Determination of monitoring system for each CCP & Principle 5: Establish corrective action
- Principle 6: Verification and validation &
- Principle 7: Record and documentation

Throughout the course, presentations were given, and case studies were also done on each topic given through two ways communication. In addition, pre- and post- assessment were carried out to evaluate the effectiveness of the course. In conclusion, this basic course was very successful and received an excellent response from all participants and organizers.

A CREATIVE FOOD ARTS FROM SWEET POTATO

Dr. Tuan Zainazor Tuan Chilek & Zamani Mohamed

Figure 1: One of the varieties of sweet potato

Ipomoea batatas is the scientific name of sweet potato which belongs to the morning glory family. Sweet potatoes are grown for tuber roots originated from either Central or South America. In Malaysia, most of our sweet potatoes come from Japan with red colour skin and yellow inside. Malaysian Agriculture and Development Institute (MARDI) produced many varieties of sweet potatoes such as Jalomas, Gendut, VitAto, and Anggun.

Sweet potato flesh exhibit varieties of colours like orange, yellow and purple. Dark orange flesh contains more beta-carotene compared to light-coloured flesh which then provide higher vitamin A once digested. Cooked sweet potato contains high water (76%) and carbohydrates (21%) besides protein, vitamins and minerals

Steamed and roasted sweet potatoes are very popular among Asia including Malaysian. It can be purchased at many stalls either at the street hawkers or stalls located in the shopping mall. Instead of this style of cooking technique, a variety of cuisines can be innovated as a main menu or as an appetizer.

The use of icing sugar as the main ingredient in the production of cake decorations is very popular. However, many cakes lover worries about sugar content. Recently, many cake decorators utilized other raw materials in making similar or even better topping as a cake decoration to provide an alternative choice to the consumers. Looking at this opportunity, a group of staff from Faculty of Fisheries and Food Science developed a new innovation product known as Instant Sweet Potato Paste as a choice of cake decoration without using icing sugar. It can be used for other decorations including plate's decorating.

Figure 2: Sweet potato was cleaned and steamed

Figure 3: Varieties of sweet potatoes with fascinating colour on plate

HOW TO BE A SMART AUDITOR

Dr. Tuan Zainazor Bin Tuan Chilek

The quality system usually provides the framework for planning, implementing, and assessing work performed by the organization which required quality assurance and quality control. The implementation of the quality system should be verified through the auditing process. The auditors need to be competent enough in the tasks they perform which required knowledge and experience in that particular field. Communication is one of the other key skills that auditors must possess to be successful because they need to communicate with different parties or level. Therefore, ongoing courses are important to further strengthen the skills of an auditor.

Normally, food safety auditors are responsible for conducting food safety audits of food manufacturing facilities.

How to be a smart's auditor? This question can be addressed by attending an appropriate training to equip yourself as an auditor. In line with this requirement, *Kursus pemantapan juruaudit pensijilan* under Food Safety and Quality Division, Ministry of Health Malaysia was conducted by Food Safety and Quality Division, Kelantan State Health Department. A one-day training was held on 24 Mei 2022 at Ibis Hotel, Kota Bharu, Kelantan. Dr. Tuan Zainazor Tuan Chilek from Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu was invited as a speaker to cover on two topics namely 'Smart audit in food processing' and 'Traceability application in food premise'.

Figure 1: Food Safety and Quality Division, Kelantan State Health Department's staff attended the course

Figure 2: An interactive knowledge sharing sessions related to audits received a good response

Why flight food is not tasty....?

Dr. Mannur Ismail Shaik and Assoc. Prof. Dr. Ts. Norizah Mhd. Sarbon

During the flight many of us noticed that the food served in-flight was not delicious… right?

Sometimes we need to add more and more sugar and cream to make coffee, still, it can't match its original taste… Why?

Sometimes passengers also complain that the food is not good and demand that the airlines be held accountable. Actually, there is nothing wrong with the airline or its staff in this regard.

There is an interesting reason behind the lack of taste in food. The food taste in the sky is reduced by 20 to 50 percent and the main reason for this is the humidity in the atmosphere. This was revealed by the American Cheddar News Network. According to Patrick Jones of Cheddar, the effect of moisture reduction on food is even more evident in aircraft. The air inside the aircraft contains only 20% humidity. Decreased moisture affects the diet. This causes the food to dry out quickly. As a result, that food does not look delicious. The dry air of a flight cabin tends to suppress our sense of smell, which is an important factor in taste. If there is no moisture in the air there will be difficulties in the tasting.

Moreover, the airline does not give bad food to the passengers. One study found that the ability to smell on airplanes was low. That is why no matter how delicious the food on the plane is, it does not taste good to the passengers. A study conducted by Oxford psychologist, Charles Spence in 2014 reveals that constant loud noises inside an airplane impact the way we taste.

Airlines recognized that by the time they served 200 + passengers, the food was either cold or dry. For food to taste the same before it is in the air, airline caterers have to add up to 30% more sugar or salt to a meal. A few airlines like Lufthansa, British Airways, and Delta Airlines conducted studies on Flight Food Taste to improve their ability to serve tasty food to their passengers.

TNCA Visit Agrotechnology Complex at Bukit Kor

Assoc. Prof. Dr. Nur Aida Binti Hashim & Dr. Mannur Ismail Shaik

On 17th February 2022, the Faculty of Fisheries and Food Science (FPSM) was honoured to receive Prof. Ts. Dr. Mohd Zamri Bin Ibrahim, Deputy Vice-chancellor for Academic and International (TNCA), Universiti Malaysia Terengganu at Agrotechnology Complex, Bukit Kor, Marang. This facility is an area where students and lecturers from the Crop Science Program carry out various teaching and learning activities including research and practical. This program was hosted by FPSM Staff at the Agrotechnology Complex.

The TNCA was welcomed by FPSM Dean, Prof. Ts. Dr. Mohd. Effendy Bin Abd. Wahid and the Bukit Kor Coordinator, Assoc. Prof. Dr. Nur Aida Hashim.

He started his tour by visiting FPSM facilities such as greenhouses, the practical plot for the Crop Science program, the nursery, and the pomology plot. During this visit, all problems regarding teaching facilities and solutions were discussed.

Prof. Ts. Dr. Mohd Zamri and the group was also taken to tour land belonging to UMT using a forest path. The tour was led by FPSM Agriculture Officer, Mr. Mohd. Shahrul Zanuddin.

On this occasion, Prof. Zamri mentioned "UMT focused on to bring this campus for fully functioning by establishing various activities and Bukit Kor has many potentials to explore."

Activities for students and staff development and to create visitor attractions at Bukit Kor including Market Garden, Jungle tracking, Mountain bike, and, Agrotourism.

Also present were Prof. Dr. Asyraf Bin Haji Ab Rahman, Dean of Centre for Basic and Advanced Education, Assoc. Prof. Dr. Fauziah Tufail Ahmad, Head of Crop Science Program, Dr. Nurul Faziha Ibrahim, Dr. Husni Hayati Mohd Rafdi, Dr. Mannur Ismail Shaik, and members from FPSM's Management Team and Chancellor Office were also present.





Biodiversity Day 2022 Logo Designed in Malay

Dr. Mannur Ismail Shaik

Convention on Biological Diversity (CBD) an associated organization of the United Nations invites to design the logo in different languages on the occasion of International Day for Biological Diversity with suitable themes/slogans. In the year 2022, the CBD emphasizes "Building a shared future for all life nature". Dr. Mannur Ismail Shaik, International Lecturer, Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu has designed CBD LOGO in Malay language for the year 2022. This logo has been recognized and published on the CBD website https://www.cbd.int/biodiversity-day/logo. Biodiversity Day 2022 focuses on the new global biodiversity framework, which will be adopted at the upcoming UN Biodiversity Conference (COP15). Previously in the year 2019, and 2020 also Dr. Mannur Ismail Shaik designed the LOGO for CDB in the Malay language in connection with the International Day for Biological Diversity 2019 and 2020, same as published on their website. This contribution promotes Universiti Malaysia Terengganu for its global visibility.

Biodiversity 2022 Logo in Malayu

Biodiversity 2022 Logo in English

FPSM Contributes 3 Days Iftar Food Pack for Ramadhan 1443H

Suhana Muhamad Hanidun, Secretary of FPSM Welfare and Recreation Committee

The glorious month of Ramadan opens up various opportunities for us to do good deeds. Faculty of Fisheries and Food Science family members did not miss the opportunity to participate in Fastabiqul Khairat campaign organised by Sultan Mahmud Islamic Centre, PISM, UMT.

A total of RM17,860.00 had been successfully collected by FPSM staff for student Iftar Food Pack. The collection raised had successfully funded 2554 food packs for 3 days iftar slots on 7 Ramadhan/ 9th April (954 packs), 15 Ramadhan/ 17th April (800 packs) and 24 Ramadhan/ 26th April 2022 (800 packs). Thank you and congratulations to all the generous contributors from FPSM. May Allah bless all of us in FPSM.

A SPECIAL CAKE MAKES THE OCCASION EXTRA SPECIAL

Suhana Muhamad Hanidun,
Secretary of FPSM Welfare and Recreation Committee

There are many reasons why we should not forget a cake for a special celebration. Whether it is a birthday, wedding or any other special occasion, cakes add more happiness and are such a perfect gift to warm the heart of the people. A special celebration almost always has a delicious and special cake besides a starter, the main dishes, dessert and some drinks.

Faculty of Fisheries and Food Science is proud to have talented staff who can produce delightful cake for our special occasion. They don't just only bake the delicious cake, but this special task combines their passion and talent. Starting from selecting the main cake to be baked and referring to the cost and the theme of the event, list of materials and procedures are first to be prepared. Then, the decorating process takes part and needs a longer time especially if the size of the cake is large. Usually, the Food Service supporting staff will lead this preparation and the task will be done using the facilities at Basic Food Preparation Laboratory and Commercial Food Laboratory, FPSM.

The first special cake by FPSM for this year was prepared for Majlis Amanat Naib Canselor on 30th January 2022. The carrot cake with cream cheese buttercream was decorated with buttercream flowers, printed edible image and fondant wording. Another special carrot cake was prepared on Majlis Sanjungan Jasa FPSM on 21st February 2022. This cake was decorated with fresh fruits, fondant wording and chocolates special for FPSM buddies.

Another grand cake production by FPSM special cake team was done on Majlis Sambutan Hari Raya UMT on 29th May 2022. Special moist chocolate cake was produced as the main cake for the Hari Raya celebration. For this event that is located outdoor at Dataran Canselori, the moist chocolate cake was decorated with chocolate ganache, fresh fruits, chocolates, printed edible image and fondant wording. Buttercream topping is not suitable to be used for outdoor event as it cannot stand the hot temperature. Besides the main cake, there were 21 boxes of assorted cakes prepared for the cake booth. There are fruit cakes, butter cakes, orange and pandan chiffon cakes, kek batik or chocolate biscuit cake , chocolate brownies and mango cheesecake.

Besides special design and decoration on the cake, the special main cake should be properly baked to make sure the taste is great and desirable. Here are some general rules for baking a cake;

1. Make sure to measure your ingredients properly.
2. Follow the steps and instructions of a recipe exactly to get a good final product.
3. Make sure to read the whole recipe before start baking.
4. Make sure to check the raising agent and oven are still working before starting.

Nothing can beat the power of cakes to light up an event and make things extra special. No matter what occasion we are celebrating, a cake is something we should not miss. Behind the special delightful cake, there surely comes with passion and patience of the bakers and decorators, congratulations to the FPSM special cake team for presenting marvellous products!

A SPECIAL REQUEST: BASIC FOOD HANDLING

Nor Azni Mohd Yunos,, Senior Science Officer, FPSM.

Basic Food Handling and Preparation Course that have been held on 8th and 9th February 2022 in Basic Food Preparation Lab, Faculty of Fisheries and Food Science, UMT. This course was co-organized by Centre of Research and Field Service - CRAFS (PPPL) and Centre of Talent Development and Innovation (PPBI), Registrar Office, UMT as a special request from Vessel and Boat Management Division.

This course has been exclusively attended by ten staffs from Vessel and Boat Management Division. Four instructors involved in this course were Mrs Nor Azni Mohd Yunos (Science Officer), Mrs Faridah Mohd Isa (Assistant Food Preparation Officer), Mr Nik 'Aqil Nik Pa (Assistant Food Preparation Officer), and Mr Zamani Mohamed (Lab Assistant (Food Service)). In this course, they are hoping to be able to prepare good quality food in terms of nutritional value, taste and safety aspects for researchers, students and crews while they're on board.

In addition to learn how to prepare food, participants were also exposed to good food handling methods, plating and serving techniques, especially for VVIP. In these two days course, participants were able to learn various types of dishes in eastern and western cooking. They learned French toast and pancake as breakfast, spaghetti bolognaise and beef stew as entrée, puree of carrot soup, and mixed salad. On the other hand, in eastern cooking, they learnt ayam percik, Siamese style beef soup, kuetiau kungfu (broad rice noodles fried with egg served with thick clear soup), sweet-sour dory fish and chap chai (stir-fried mixed vegetable). As a dessert, they were taught how to make a fruit cocktail and agar-agar santan (coconut milk pudding).

This course ended on a good note as all the participants enjoyed the food that was prepared in class. Hopefully, this course will be useful for the participant to further serve a high-quality service at work while enjoying fantastic food on board.

WELCOME TO SRD 2022

Welcome to Student Research Day 2022 (SRD). This year, the Faculty of Fisheries and Food Science (FPSM) was appointed as the SRD secretariat with the theme "Living into the Endemic era of COVID-19". The SRD programme is a platform where the final year undergraduate students will have the chance to share their research findings with the industry panels, researchers and public university evaluators appointed at the university level centrally in the form of poster presentations. The implementation of the SRD programme has started since 2018 and has been successfully implemented consecutively every year. Furthermore, the SRD programme is also intended to provide a platform for researchers, academic experts, industry collaborators and students to establish strong relationships and generate significant research networks together in the future.

THEME

Living into the Endemic era of COVID-19

TOPIC

FSSM – Science, Marine and Environment
FTKKI – Ocean Engineering, Technology and Informatics
FPSM – Food Security
FPEPS – Business, Economics and Development
FPM – Maritime Studies

1st INTERNATIONAL POSTGRADUATE SYMPOSIUM ON FOOD SECURITY (IPSyoFS-22)

WHEN: July 25, 2022 @ 9:00 am – 4:30 pm Asia/Kuala Lumpur Timezone

WHERE:Universiti Malaysia Terengganu

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