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Opening Ceremony

Bungo Range Multidisciplinary Expedition

By YB Miro Anak Simuh
Member of State Legislative Assembly
N18 Serembu

Bung Siradjak Hall
Tringgus, BAU

5 December 2017

BUNGO RANGE MULTIDISCIPLINARY EXPEDITION 5-10 DECEMBER 2017

Opening Ceremony Program
Date: 5 December 2017
Time: 8.00am - 1.00pm
Place: Bung Siradjak Hall, Tringgus, Bau

Time		Program
8.00 am	:	Registration of Researchers and Participants
9.30 am	:	Arrival of VIPs
9.45 am	:	Arrival of YB Miro anak Simuh and YBhg Prof Datuk Dr Mohamad Kadim Suaidi • Majlis Pemberkatan Adat • Welcoming dance from the Tringgus community
10.15 am	:	Welcoming address from the community representative
10.30 am	:	Speech from YBhg Prof Datuk Dr Mohamad Kadim Suaidi
10.45 am	:	Speech from YB Miro anak Simuh
11.00 am	:	Launching of the Expedition
11.15 am	:	Photo-taking session and Expedition flag-off
11.30 am	:	Lunch
1.00 pm	:	End of the ceremony

Expedition Background and Goals

The state of Sarawak has targeted to gazette total of about 2.5 million hectares as conserved forests under the Heart of Borneo Initiatives. As of today, a total of 2.1 million hectares comprising of national parks, wildlife sanctuaries and nature reserves have been included in the Initiatives. Some 400,000 hectares which encompasses the Kelinkang Range and Bungo Range covering Mount Pueh, Mount Gading, Tanjung Datu National Park and Samunsam Wildlife Sanctuary in the southern part of Sarawak will be included in the Heart of Borneo Initiatives in the future.

Bungo Range is located in 1° 16' latitude and 110° 9' longitude, about 500 meter above the sea level. Bungo Range is important water catchment area in the upstream of the Sarawak Kiri River and Sarawak Kanan River. The Range covers primary forest and the secondary forests are due to agriculture and logging activities. The primary forest of Bungo Range has been gazetted as a national park on 26 February 2009. To the east of this range, the Bidayuh tribe inhabit several villages namely Kampung Bojong Sting, Kampung Regjoi Nyegol, Kampung Sait Muk Ayun, Kampung Tama Sait, Kampung Pain and Kampung Semban. Meanwhile Kampung Puak and few villages in Tringgus, including Kampung Nguan, Kampung Rotan and Kampung Bong are located in the west of the Range. The southern end of the Bungo Range is the boundary of West Kalimantan, Indonesia.

Bungo Range Multidisciplinary Expedition is one of the activities organized in conjunction with Universiti Malaysia Sarawak (UNIMAS)'s Silver Jubilee Celebration and is organized by Institute of Biodiversity and Environmental Conservation with the support of Forest Department Sarawak and other Institutes and Faculties within UNIMAS. The goal of this expedition is to increase the visibility of UNIMAS not just to the Tringgus community but also to answer the call of the Sarawak government who wants to emphasize the implementation of Digital Biodiversity in this state. Choosing the Bungo Range as the expedition location is vital as there is a lack of information pertaining to biodiversity and socio-economy. Information obtained from this expedition will play an important reference in contributing to the conservation and management plan of Bungo Range National Park.

Expedition Objection

The objectives of this expedition are as follows:

1. To explore and document the diversity of flora and fauna surrounding Bungo Range,
2. To assess the demography and state of community development of the people living surrounding Bungo Range,
3. To assess the level of use and conservation of natural resources by communities around the Range, and
4. To assess the potential of natural resources for community social development in the area.

Research Expedition Component

The participants of this expedition comprises of researchers from Universiti Malaysia Sarawak, Forest Department Sarawak and Sarawak Biodiversity Centre in the following area:

No.	Research Area	Researcher
1.	River and water quality	UNIMAS
2.	Plants	UNIMAS/Forest Department Sarawak/ Sarawak Biodiversity Centre
3.	Entomology	UNIMAS
4.	Reptiles and amphibians	UNIMAS
5.	Macrofauna and freshwater fishes	UNIMAS
6.	Avifauna	UNIMAS
7.	Mammals	UNIMAS
8.	Medical Science	UNIMAS
9.	Humanities and socio-economy	UNIMAS
10.	Arts, Culture & Tourism	UNIMAS

Expedition Location

The location of this expedition includes the eastern part of the Bungo Range National Park which is shown in the map. This area can be accessed through Tringgus which is located around half-hour drive from Bau town.

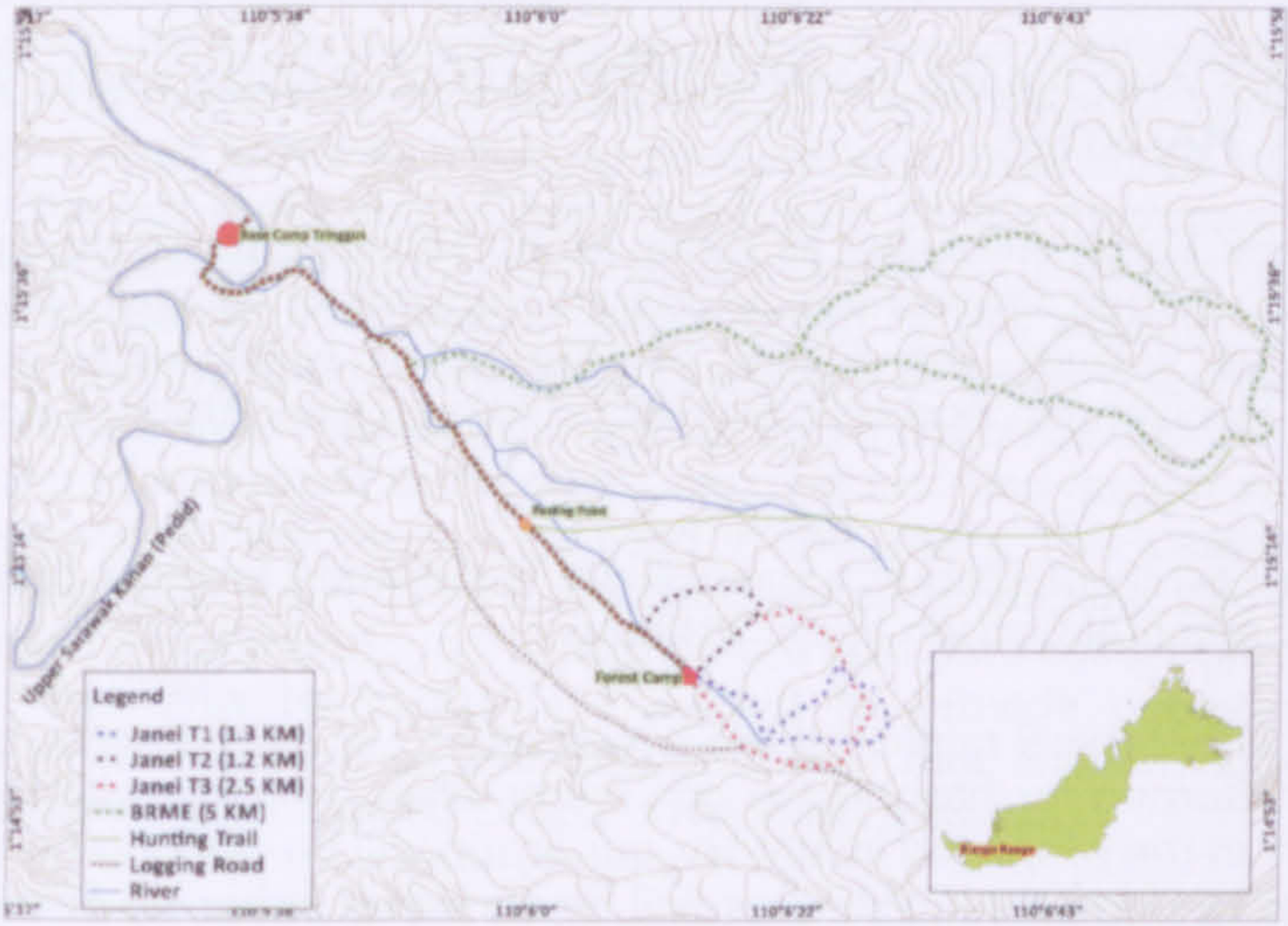

Figure 1: Bungo Range Multidisciplinary Expedition Map

Research Synopsis

Theme: Biodiversity, Ecology and Phylogeny

1: AVIFAUNA OF BUNGO RANGE, SARAWAK, MALAYSIA

Researchers: Andrew Alek Tuen, Rahah Mohd Yakup, Mohd Hasri, Isa Sait, Stephanie Judi, Julia Wilson, Fizl Sidq, Nur Nadhirah Izzaty Selamat, Ng Wen Teng, Fadzirah Izrahni, Naserene Mohd Nazari, Nur Fariha Mohd Fozy, Anis Musfirah Abdullah, Batrisyia Teepol, Mohamad Faqrullah Bakri & Muhammad Hamdan Mahili

Affiliation: Institute of Biodiversity and Environmental Conservation; Faculty of Resource Science and Technology, Universiti Malaysia Sarawak

Synopsis: Bungo Range is part of the Sarawak Kiri River catchment. The forest is made up of secondary vegetation as a result of clearing for padi cultivation by the people of Tringgus on the western side of the range and by people from kampong Semban, Pain & Rejoi on the eastern side of the range. The forest on the Tringgus side was also logged in 1995. Hence wildlife habitat at Bungo Range is composed of secondary forest, logged forest, and relatively undisturbed primary forest closer to the peak. The avifauna of Bungo Range has not been properly documented and this is a significant gap in our knowledge of the avifauna of Western Sarawak. The aim of the research proposed here is to gather baseline data on the avifauna of Bungo Range with particular focus on effect of habitat types and elevation, and species of conservation importance. The survey will be conducted using mist nets, including high pole nets, and observation over a period of at least 4 days per site. Sampling sites will include secondary forest, logged forest and primary forest.

2: PRIMATES AND SMALL MAMMALS OF BUNGO RANGE NATIONAL PARK, SARAWAK, MALAYSIA

Researchers: Faisal Ali Anwarali Khan, Mohd Ridwan Abd Rahman, Roberta Chaya Tawie Tingga, Praveena Rajasegaran, Nursyafiqah Shazali, Muhd Amsyari Morni, Julius William Dee, Qhairil Shyamri Rosli, Norfarhana binti Mazlan, Yuvarajan Manivannan, and Mohammad Zahid bin Zainal Abidin & Andrew Alek Tuen

Affiliation: Faculty of Resource Science and Technology; Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: The tropical rainforest in Sarawak is known as one of the biodiversity hotspot in Borneo for harbouring rich mammalian diversity with high level of endemism. In the proposed inventory, our group will be working on three major mammalian groups. First, Primates will be surveyed either by observations or sounds along the established trails in the park. Bornean's primate community

is exceptionally diverse with the presence of large area of tropical rainforest as its main habitat and often regarded as good indicator of both lowland and highland forest diversity. Bungo Range National Park is currently under orangutan rapid assessment beyond the Batang Ai National Park and Lanjak Entimau Wildlife Sanctuary (BALE Landscape). It is important to understand the primate communities in different habitat types and conditions for developing proper conservation plan for this critically endangered Primate. Secondly, non-volant small mammal will be trapped using standard cage traps and Sherman traps with various baits. Similar to other studies, number of non-volant small mammal is expected to be low given short sampling period (5 trapping days) and may highly influenced by food availability during sampling. Finally, as for the volant mammals, bats will be trapped using both mist-nets and four-bank harp traps. Both volant and non -volant small diversity at Bungo Range National Park are expected to be similar to those at Mount Penrissen as the site is nearby with similar forest type and large boulders. This inventory is expected to provide basic information on the diversity and abundance of mammalian diversity at Bungo Range National Park for conservation and the management of this group.

3: CAMERA TRAPPING WILDLIFE IN BUNGO RANGE, SARAWAK, MALAYSIA

Researchers: Mohd-Azlan Jayasilan, Sally Soo Kaicheen, Nurul Asna Hidayah, Marius Jocha Maiwald, Melynda Cheok Ka Yi & Thaqifah Syaza bin Jailan

Affiliation: Faculty of Resource Science and Technology, UNIMAS

Synopsis: The diversity of flora distributed in tropical rain forest constructs multiple strata along elevation, providing different niche and make up disparate community composition. However, deforestation in Southeast Asia has been occurred since 1800s with increasing demand from Asian populations on paddy Oryza sativa and other agricultural activities. Borneo itself experienced high annual deforestation rate with relatively little documentation on it compared to its region since 1900s. This has resulted in forest fragmented forest pockets that hold the last remaining of larger mammals. Larger mammals seem to be one of the least studied taxa in tropical rain forest due to its nocturnal, cryptic, and sensitive behavior. In view of this, the aim of this current research is to understand the distribution and activity pattern of larger mammals in Bungo range's forested area. This study is important as many large mammalian species are considered important to monitor poaching rate and human activities. Ten infrared sensored cameras will be used in this study. This passive and non-invasive technique will minimize the disturbance to wildlife. Cameras will be left for three to four months in the field before final data collection. Information gathered from this technique is expected to provide useful information and confirm the occurrence and distribution of rare and endangered larger mammals (i.e. Sunda Clouded Leopard *Neofelis nebulosa*).

4: A RAPID SURVEY ON AMPHIBIANS AND REPTILES OF BUNGO RANGE

Researchers: Indraneil Das, Izneil Nashriq, Yong Min Pui

Affiliation: Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: The survey objectively to document the herpertofauna diversity of Bungo Range. Visual encounter survey and pitfalls trapping method will be applied during the survey along forested trails and streams. Together with photographic evidence and voucher samples, the data collected can be used for future studies and conservation efforts.

Herpertofauna serve as ecological indicator among other important role they play in the balance of the ecosystem. With the dwindling of forest area, conservation is crucial to avoid extinction of native and endemic species.

5: SELECTED INSECT FAUNA OF BUNGO RANGE, SARAWAK

Researchers: Fatimah Abang, Muhamad Ikhwan Idris, Ratnawati Hazali, Wan Nurainie Wan Ismail, Christharina S. Gintoron, Mohamad Jalani Mortada, Nur Azizuhamizah Idris & Ahmad Irfan Abdul Razak

Affiliation: Faculty of Resource Science and Technology; Centre for Pre-University Studies, Universiti Malaysia Sarawak

Synopsis: Tropical rainforests are distinguished by the enormous biodiversity they support, within which, insects are the most diverse animal group. Spectacular insect groups such as the lepidopterans (moths and butterflies) are among the best-known insects and serve as a good bioindicator group. Other insects of interest are the fulgorids (lanternflies), which unlike the lepidopterans, are charismatic, yet rarely studied. This proposal aims at providing baseline data on selected insect fauna of Bungo Range such as moths, butterflies and lanternflies. Sampling and collecting will be conducted using various passive and active techniques, which include the use of Modified Pennsylvanian light traps, and butterfly baited traps over a four-day sampling period at various selected sites. Collecting will also be done with aerial and sweeping nets. Specimens will be curated according to standard insect preservation techniques. Voucher specimens will be deposited at the UNIMAS Insect Reference Collection.

6: MACROFAUNA OF HEADWATER STREAMS IN BUNGO RANGE, SARAWAK, MALAYSIA

Researchers: Jongkar Grinang, Anita Muli, Gabriel Tonga Noweg & Gabriel Balan Surang & Mohammad Ashiq Muzakkir

Affiliation: Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: The headwater streams in Bungo Range serve not only as water source for the local community, but being as relatively less disturbed ecosystem it also expected to support many species of river fauna. Studies on stream fauna had been conducted at several areas in Bau and Padawan limestones, but the macrofauna of headwater streams in Bungo Range remain unexplored. This study aims to document the species richness of stream macrofauna in the area include crustaceans, mollusks and aquatic insects. Sampling methods to be employed in the study may include scooping and night survey along the stream transects.

7: FRESHWATER FISHES FROM THE RIVERS IN BUNGO RANGE

Researchers: Fazimah bt Aziz

Affiliation: Faculty of Resource Science and Technology, UNIMAS

Synopsis: The study will be focused on documenting the check list of the freshwater fishes from the rivers in Bungo Range. Apart from that, the water quality of the rivers will also be reported. Sampling of the fishes will be done in small to medium sized streams and the main rivers in Bungo Range. Fish will also be sampled in Bengoh Dam. Fishes will be caught using electro-shocker, fish traps, minnow trap, fine-meshed hand net, scoops or dip nets. For the dam sampling, fish will be caught using three-layer net or gill nets. Photographs will be taken in the field immediately to record the real colours of the fish as most of the colours will be fade during transportation and after preservation.
Sampling for water quality will be conducted at the same site as the fish samplings. Physical water parameters that will be measured are Total suspended solid (TSS), Turbidity and Temperature. Chemical water parameters that will be measured are Dissolved Oxygen, pH, salinity, conductivity and nutrient content. One litre of water will be taken from each site and brought back to the lab for these analyses.

8. MICROHABITATS UTILIZATION OF THE RIPARIAN AND NON-RIPARIAN FROGS OF BUNGO RANGE NATIONAL PARKS

Researchers: AP Dr Ramlah Zainudin, Prof Dr Ahmad Hata Rasit, Isa Sait, Muhammad Fadzil bin Amra, Elvy Quatrin Deka, Nooraina Atira Alaudin, Najmi Naim

Affiliation: Faculty of Resource Science and Technology; Centre for Pre-University Studies, Universiti Malaysia Sarawak

Synopsis:A scientific research of repeated patterns in species distribution is an essential component to generate predictive coalescence of space utilization by species. In order to achieve the evaluation of evolution of habitat selection, it is necessary to apprehend relative species abundance and to understand the responsible factors for species presence and absence in a particular habitat. This research will focus on riparian and non-riparian frog. With the given statement, we came out with the objective as follows:
a) to determine the species distribution and composition in Bungo Range National Park as a preliminary species checklist.
b) to obtain microhabitat preferences of existence species.

Bungo Range National Park was gazette in 2009 while Bengoh Dam reservoir was ready for impoundment in 2012. It is requisite to study more on unexplored or explored habitats with intension to inventory and for documentation. Lack of knowledge and inclination anthropogenic effect around the national park have prompted a study to gather baseline information of frogs in this park. More intensive and systematic studies may yield more information on the diversity of frog's species. This study will be carried out at Bengoh Range National Park from 5th December 2017 to 10th December 2017. At each study sites, all ecological data such as microhabitat and water quality of the streams will be recorded. Water quality parameters as follows; pH, humidity, temperature, dissolved oxygen, and turbidity. Microhabitat description such as vegetation, horizontal position, vertical position and substrates following Inger's habitat code. Visual encounter survey will be used as a census technique. Transect sampling will be done in the provided forest trails and accessible streams.

For species identification, each individual captured will be classified using identification keys from a field guide to the Frogs of Borneo. Some of the calling individuals will be sound recorded and identified through sound advertisement identification. Selected individuals for a representative species will be taken as a voucher specimen for inventory. A small portion of thigh muscle will be drawn and preserved in absolute ethanol for further molecular analysis. However, voucher specimen will be fixed in 4% formalin, later preserved in 70% ethanol for a long term preservation technique.

9: ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS USED BY PEOPLES IN TWO VILLAGES (TRINGGUS & PUAK) OF BUNGO RANGE NATIONAL PARK, SARAWAK

Researchers: Zaini Bin Assim, Fasihuddin Badrudin Ahmad, Ismail Bin Jusoh & Farah Binti Zaini, Nurshazira Binti Zamri, Farah Juliana binti Juni

Affiliation: Faculty of Resource Science and Technology, UNIMAS

Synopsis: Sarawak has a rich floristic diversity and cultural heritage. Even though many scientific studies have explored the usage of wild plants for the purpose of treatment, foodstuff or others, efforts carried out in this field are not adequate in documenting this kind of information because of the large area of the country and the richness of cultural heritage. Therefore, a study will be conducted to assess and document the knowledge and use of medicinal plant species used by the peoples of Tringgus Village at the western of Bungo Range National Park to treat different human ailments. The ethnobotanical data will be collected using interview and questionnaires by selecting several individuals residing in the area of the Bungo Range and volunteering to participate in the research through face-to-face interviewing. The information to be collected included local name of the traditional medicinal plant, type (cultivated or wild), diseases treated, parts used, condition of plant used, method of preparation, route of administration, ingredients added, other uses of the plant and existing threats to medicinal plants species. Wild plants that are said to be used will be collected with guidance from the informant and herbarium materials will be prepared. Finally, the data will be analysed statistically.

10: HOW MANY SPECIES ARE THERE IN BUNGO RANGE? USING ARACEAE AND ZINGIBERACEAE (ANGIOSPERMS) AS INDICATORS

Researchers: Wong Sin Yeng, Ooi Im Hin, Chua Kek Shen

Affiliation: Faculty of Resource Science and Technology, UNIMAS

Synopsis: For its land area, Bungo Range is considered to have one of richest and most diverse assemblages of flowering plants of anywhere in Western Sarawak. Although physical factors are doubtless partly responsible – the area has significant mountain ranges with peaks and ridges, geologically is mainly shales with sandstone intrusion, coupled with high and more-or-less year-round rainfall – the remarkable plant diversity is not readily explicable on these few factors alone. Previous research investigating the floral diversity of western Sarawak has focussed on the tree flora. However, much insight can be gained from studying the herbaceous flora dependent on to habitats provided by the forest canopy layer. This approach provides a set of data to match for congruence with distribution the tree species, and also enables analyses of the effect of forest degradation on the herbaceous flora, and facilitates analysing disjunction or vicariance distributions for herbaceous plants linked to known historical fluctuations in forest extent.

The flowering herbaceous plant families Araceae and Zingiberaceae are among of the most species-rich and diverse on Borneo. Species of both families are primarily dependent upon an intact forest canopy, and moreover often exhibit obligation to specific geologies, restricted pollination guilds, and in many instances highly limited fruit/seed dispersal which combine produce often very high levels of local endemism.

The Araceae of Borneo comprises 36 genera of which 35 are indigenous, and eight (Aridarum, Bakoa, Bucephalandra, Ooia, Phymatarum, Pichinia, Schottariella, Schottarum) are wholly endemic. The total aroid species for Borneo is currently about 350 described accepted taxa, with at least this many again yet to be described. Zingiberaceae on Borneo comprises 19 genera, of which four (Burbidgea, Haplochorema, Myxochlamys, and Tamijia are endemic), and about 250 described species, with at least another 50 species awaiting formal description. We will assess how many of these genera occur in Bungo Range during the expedition and from these, access the levels of endemism among these taxa.

11: THE UNDERSTOREY FLORA OF BUNGO RANGE NATIONAL PARK AND ITS ADJACENT AREAS

Researchers: Meekiong, K., Mohizah, M., Sayok, A., Wasli, M.E., Noweg, T., Miraadila, M.I., Syauqina, M.Y., Runi, S.P.

Affiliations: Faculty of Resource Science and Technology, Department of Forest Sarawak, Research, Development and Innovation Division (RDID), 6th Miles, Penrissen Road, 93250 Kuching, Sarawak, Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: The understorey flora is underlying layer of vegetation in in the forest area, especially the shrubs and herbaceous plants that growing between the forest canopy and the forest floor. Only a small amount of light penetrates the canopy and therefore almost of the understorey flora are shade tolerant plants. The tropical rainforest has greatest number of understorey flora compare with any other forests in the world. The understorey flora of Bungo Range National Park and its adjacent areas somehow scientifically never been recorded before. Only few collections are available in the herbaria and some are reported in scattered publications. Therefore, the aims of this project are to record and identify the understorey flora, and to produce a checklist of understorey of Bungo Range National Park and its adjacent areas. General herbarium specimen collections will be conducted in the propose areas and the specimens will be kept in the herbarium of Universiti Malaysia Sarawak and herbarium of Forest Department Sarawak.

12: DOCUMENTING PLANT OF ECONOMIC AND ETHNOBOTANICAL IMPORTANCE FROM BUNGO RANGE: A CHECKLIST

Researchers: Yeo, F.K.S., Shabdin, Z., Meekiong, K

Affiliation: Faculty of Resource Science and Technology, UNIMAS

Synopsis: Ethnobotanical study, a study of plant-human interaction i.e how human utilise plants for their well-being. This study not only initiates pharmacological investigation and agriculture development for modern science, but also, shows the unique cultural value of plants to human. Various plant family plays a vital part in different ethnicities. Not only, different ethnics may interact differently with plants, but there is also a possibility that different localities of the same ethnic may interact differently with plants. The communities near the perimeter of Bungo Range National Park is mainly populated by the Bidayuh. For Bidayuh, their interaction with plants is well documented for the communities around Jagoi, Singai and Kampung Grogo in Bau. The Bidayuh interaction with plants in Bungo Range is not known. A preliminary visit to the communities has identified Malay, Chinese and Indonesian (transnational marriage) are the minorities in some of the villages. The mixture of ethnicity in the villages may affect how the communities interact with plants. A study to identify and document all plants with economic and ethnobotanical significance is proposed for a selection of residents/villagers near the perimeter of Bungo Range. This project is aimed to (i) document plant species that are commonly used for traditional medicine, and that have agricultural value for the residents/villagers near the perimeter of Bungo Range and (ii) to document the differences in plant usage among the residents/villagers that are in the Bungo Range in comparison to other villagers that are near the Bungo Range perimeter but are also are well connected to town area such as Bau and Padawan. Any other plant usage other than listed will be documented if available. Interviews/discussions and observation will be the main approaches to achieve the above objectives to generate baseline information. This study is meant to support the development of the proposed plan to conserve the remaining forested lands in the area.

13: MEASURING THE VEGETATION STRUCTURE, DIVERSITY AND ABUNDANCE AND, ECOLOGICAL PROCESS AT THE LOGGED-OVER FOREST, ABANDONED AGRICULTURAL AREA AND NATURAL FOREST

Researchers: Gabriel Tonga Noweg and Julia Nelson

Affiliation: Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: Numerous past studies have been conducted to investigate the ecological attributes related to reforestation (Wortley et al., 2013). However, most of the studies such as studies by Yakob and Fekadu (2016), Asmelash et al. (2016), Aliyi et al. (2015), Kuma and Shibru (2015), and Dyakov (2013), only measure the attributes separately. A study is proposed in logged-over forest, abandoned agricultural areas and old undisturbed forest at the periphery of Bungo National Park to measure the ecological attributes of reforestation. These attributes include vegetation structure, diversity and abundance. Systematic sampling will be used to collect the necessary data from the three forest types. The results will be used to assess the success of forest regeneration of economically important tree species.

14. DOCUMENTATION OF TRADITIONAL KNOWLEDGE ON USEFUL PLANTS IN THE TRINGGUS BIDAYUH COMMUNITY IN BAU

Researchers: Jovita Ripen, Gabriel Tonga Noweg and Hanas Harry

Affiliation: Sarawak Biodiversity Centre and Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: Traditional knowledge on use of wild plants is an important component of research on tropical plants. In the Bidayuh community of Sarawak, several past documentations have been conducted but were specifically focused on medicinal plants and food plants. In view of the recent gazettement of Bungo mountain range as Bungo Range National Park, there are interests on the possible implications on local livelihood. Several Bidayuh communities are located close to the park boundary. This study is proposed to examine the trend of use and extent of dependency of the Tringgus community on non-timber forest products extracted from the nearby forests along the park boundary. The result of this study is expected to contribute to the pool of information needed for a better planning and management of the park.

Theme: Humanities, Socio-economic

1: HUMAN COMMUNITIES AND THEIR USES OF NATURAL RESOURCES

Researchers: AP Dr Neilson Ilan Mersat, Prof Dr Spencer Empading Sanggin, AP Dr Ahi Sarok, Dr Wong Swee Kiong, Dr Mohamad Suhaidi Salleh, Mr Mohamad Azizul Hafiz Jamian, Eva Kristin Larry, Angelina Ansley, Elvin Jawol

Affiliation: Faculty of Social Sciences, UNIMAS

Synopsis: Bungo Range is part of the Sarawak Kiri River catchment. There are human communities from Tringgus, Kampung Semban, Pain & Rejoi staying on both eastern and western parts of the range. The forest on the Tringgus side was logged in 1995. However, the human communities staying nearby Bungo Range are dependent on natural resources in the area. The aim of this study is to explore the various uses of flora and fauna among the indigenous communities living in Tringgus as well as to investigate possible gaps in the current knowledge between elderly and younger generations on the uses of these resources. The study will also explore the resource conservation practices among the indigenous communities and examine their livelihood strategies in order to evaluate its sustainability in the changing biodiversity environment of Bungo Range. Surveys will be conducted using focus group discussions, semi-structured interviews and in-depth interviews in order to find out the utilization of natural resources, livelihood strategies and conservation practices of the local community, as well as the historical timeline on resources availability in the area.

2: A SURVEY OF HUNTING ACTIVITIES TOWARDS HEALTH RISK AND SOCIO ECONOMIC STATUS FOR INDIGENOUS PEOPLE AT BUNGO RANGE, SARAWAK

Researchers: Farah bt Zaini, Madinah bt Adrus

Affiliation: Faculty of Social Sciences; Faculty of Resource Science and Technology, UNIMAS

Synopsis: A few settlements of the Bidayuh-Tebiak community had existed in the Upper Bungo Range since the 1850s, namely Kampung Pain Bojong, Kampung Rejoi and Kampung Sait. After the impoundment of Bengoh Water Supply Dam in 2015 which causes these villages to be under water, new villages were created on NCR land on the hills above the water level, these are Kampung Bojong Sting, Kampung Rejoi Nyegol and Kampung Sait Muk Ayun. The remoteness of these villages meant they are heavily dependent on the natural environment for their livelihood. Their activities such as hunting, fishing, collecting jungle produce, clearing the land for farming may have an impact on the environment as well as their health. Dam impoundment may have forced the people to exploit newer areas with difficult terrain which can have an effect on their health. There are also possibilities of environment-related diseases outbreak that can occur during hunting activities. The aim of the research is to look at the consequences of hunting towards the health risk for the community and also the effect of development towards the hunting activities in the respective area. The survey will be conducted by using mix method (qualitative and quantitative) and observation at the study site for four days in a row.

Theme: Medical

1: SURVEY OF PERCEPTIONS TOWARDS NOSE AND THROAT CANCER IN BUNGO

Researchers: AP Dr Ting Su Hie, Monica Liaw, Lipina anak Jintang, Myra anak Ungau

Affiliation: Faculty of Language and Communication

Synopsis: Nose and throat cancer, also known as nasopharyngeal cancer, is among the top five cancers in Malaysia, according to the latest National Cancer Registry records (Omar & Tamin, 2007). Malaysian men rank second in the world and Malaysian women rank number one in the world for nasopharyngeal cancer. Researchers have found the high prevalence of nasopharyngeal cancer among the Bidayuhs of Sarawak (Devi et al., 2004; Sim et al., 2010). The chances of recovery for nasopharyngeal cancer is low due to late detection at the third or fourth stage because the early symptoms are usually mistaken for common cold. Furthermore, the survival rate is also affected by compromises in treatment which is financially draining on the patients and their family. However, little is known about the awareness of the public towards nasopharyngeal cancer. The aim of the research is to examine perceptions towards nasopharyngeal cancer in Bungo. The survey will be conducted among people living in the vicinity of the Bungo range. The respondents will be from 12 years old with no upper age limit. Respondents will be interviewed and will fill in a questionnaire to find out their knowledge of nasopharyngeal cancer as well as perceptions on the severity of the cancer, and their susceptibility to the cancer. The findings will provide useful guidelines for cancer risk communication.

2: FAMILY PLANNING DECISION: A CROSS-SECTIONAL STUDY THE ROLE OF HUSBAND AMONG BIDAYUH TRIBES FAMILY IN KPG. TRINGGUS BENGOH

Researchers: AP Dr. Soe Lwin, Dr. Myat San Yi, AP Dr. Cheah Whye Lian, AP Dr. Tin Moe New, Dr. Mardiana binti Kipli, Dr. Mi Mi Khaing, Dr. Thidar Soe

Affiliation: Department of Obstetrics and Gynecology, Faculty of Medicine and Health Sciences, UNIMAS

Synopsis: The increase in population size is a burden on the resources in most of the countries around the world. It affects the economy, environment, life expectancy and regional development. The estimated population in Sarawak is about 2.77 million in 2017; male is 1.44 million and female is 1.32 million. The increasing number of unwanted pregnancy in global population is also major problem. Family planning refers to limit or space the number of children by using contraceptive methods. Most of the husbands have lack of awareness of these methods although they are the dominant person in their family. Husband involvement in family planning has become crucial in enhancing family well-

being. The Bidayuh tribes in Bengoh, Sarawak have their own language, culture, historical identity, traditional norms, family structure, gender roles and religious affiliations. The objectives of this research are to (i) determine the socio-demographic profile of the respondents, (ii) assess the level of knowledge of respondents in family planning at Bidayuh community, (iii) determine the role of respondents in making family planning decisions at Bidayuh community, (iv) find out the specific problems for family planning in Bidayuh community, (v) promote the usage of contraceptive methods at Bidayuh community. Through this research, we hoped that would achieve the most of the Millennium Development Goals by 2015 such as to eradicate extreme poverty and hunger, reduce child mortality and improve maternal health.

3: ENVIRONMENTAL SAMPLING FOR BURKHOLDERIA SPP. AT BENGOH

Researchers: Dr Yuwana Podin, Lua Viana Pangau

Affiliation: Institute of Health and Community Medicine, UNIMAS

Synopsis: In order to assess for the presence of Burkholderia spp. including B. pseudomallei which is pathogenic to humans and animals, environmental samples (soil and water) will be collected around the study site. Consent will be obtained from property owners of the sampling sites and a simple questionnaire will also be used to gather information from villagers on possible previously reported cases of melioidosis at the study site. A short awareness talk will be conducted to create awareness on melioidosis and to promote health-seeking behavior among villagers. The environmental samples will be transported back to the laboratory at the Institute of Health and Community Medicine for bacterial isolation. Bacterial strains that are successfully isolated will be subjected to molecular characterization. Genomic comparison will be done on the isolates collected from this study site and compared with that isolated from other regions.

4: DISTRIBUTION OF WATERBORNE PARASITES AT BENGOH DAM

Researchers: Lesley Maurice Bilung, Kasing Apun, Hashimatul Fatma Hashim, Elexson Nillian, Lau Seng

Affiliation: Faculty of Resource Science and Technology, UNIMAS

Synopsis: Infection cases by waterborne parasites have ubiquitous distribution around the world including in developed and developing countries. Cryptosporidium and Giardia are among the most common protozoan parasites infecting humans especially through contaminated drinking water. They are robust in variety of environmental conditions, chlorine disinfection and small to pass filtration barriers of water treatment plants (Carmena, 2010). In developed countries such as the United States of America and Canada, both parasites are guidelines to safety parameters of water treatments (Health Canada, 2012; U.S Environmental Protection Agency, 2016). Besides, Ascaris lumbricoides, Trichuris trichuria, hookworm, Trichostrongylus, Entamoeba histolytica, Balantidium coli are a few of helminthic parasites. These helminthic parasites mostly have become common intestinal parasites infecting human and usually unrecognised (Anuar et al., 2014). Recently, our study has involved raw and treated water of water treatment plants in Batu Kitang, Bau and Seniawan. As Bengoh dam supplies water to these plants, a study on the distribution of waterborne parasites at thé dam will be significant. This will be the first such study related to water catchment area in Sarawak. This study will detect the prevalence of waterborne parasites at Bengoh dam and find significant difference of the distribution at surface, middle and bottom level.

Water samples will be collected near to the wall of the Bengoh dam. A volume of 20 litres of water samples will be collected each from surface, middle (18 meters) and bottom (36 meters). Surface water samples will be collected using a pail, while subsurface and bottom water samples will be collected using Van Dorn water sampler. A measuring tape will be used to measure on the rope of Van Dorn sampler to determine the actual level of middle and bottom water level. Another 100 ml of water samples will be collected for faecal coliform analysis at each of the water levels. All the samples will be brought to the lab immediately to prevent distortion of the parasite morphology. The water samples will be processed and used for detection of waterborne parasites using immunofluorescent assay and bright field microscopy. The significant difference of the waterborne parasites distribution among the water levels will be determined using SPSS software.

5: DOING INFANT MASSAGE: ITS INFLUENCE ON MOTHER-CHILD ATTACHMENT, INFANT SLEEP AND EXPERIENCE OF MOTHERS IN KPG TRINGGUS

Researcher: Chan Kim Geok

Affiliation: Faculty of Medicine and Health Sciences, UNIMAS

Synopsis: Recent research has suggested that the practice of infant massage provides benefits for both mother and baby. For the baby, the benefits are reported to include relaxation, relief from discomfort and colic, stimulation and interaction. It gives pleasure, relaxation and enjoyment to mothers besides the benefits of peer support in the context of group mothers-infant session. The International Association of Infant Massage developed the infant program to promote nurturing touch and advocates that children and parents are to be respected and valued. Some studies report about positive results of infant massage in improving infants' sleep quality. Baby massage is reported as a natural way for communication and for establishing a sense of touch and eye contact to improve attachment between mothers and babies. This study aims to examine whether involving mothers in the Kpg Tringgus in doing infant massage will have any influence in the maternal-child attachment and their babies' sleep. Mothers will be taught infant massage and thereafter instructed to massage their infants at home for 15 minutes twice a day. Questionnaires will be used to assess the outcome measures pre teaching and 3 days post infant massage teaching. Focus-group interview will also be conducted with mothers at end of infant massage teaching to explore their experience with infant massage. Study hopes to provide useful insights in term of infant massage as a potential child care practice.

6: HEALTH STATUS AND QUALITY OF LIFE OF BIDAYUH TRIBES IN BENGOH

Researchers: Dr Helmy Hazmi, Dr Razitasham Safii, Dr Ayu Akida Abdul Rashid.

Affiliation: Faculty of Medicine and Health Sciences, UNIMAS

Synopsis: The Bidayuh tribes in Bengoh, Sarawak may have unique needs from the general population. They have their own language, culture, historical identity, traditional norms, family structure, gender roles, beliefs about health, and religious affiliations. However, little is known about their health status and quality of life especially after the construction of Bengoh Dam. Studying health status, quality of life, and its determinants are important in promoting the general physical and mental health and well-being of people. Data will be collected using a standard health screening instrument (BSSK), physical examination and laboratory investigation. Through this research, we will get the health profile of the Bidayuh in this area and at the same time able to identify their health needs and gaps. The findings will support the related agencies to have more focus health programs directed to Bidayuh tribes.

7: PREVALENCE OF NPC AND ASSOCIATED FACTORS AMONG BIDAYUH IN BENGOH AREA

Researchers: Prof Datu Dr Andrew Kiyu, Dr Eunice Melisa, Dr Sam Jiee, Dr Drend Jones

Affiliation: Faculty of Medicine and Health Sciences, UNIMAS; Institute of Medical Research (IMR)

Synopsis: Nasopharyngeal carcinoma is a common cancer among bidayuh. This study is to determine the prevalence of NPC and other cancers in the community, the frequency of human leukocyte antigen (HLA) class I genes among the community and to determine the prevalence of positive plasma Epstein-Barr Virus (EBV) DNA test among the community. This research is part of collaboration with Institute of Medical Research (IMR), Kuala Lumpur.

Theme: Arts, Culture & Tourism

1: EKSPLORASI DOKUMENTASI VISUAL DAN TEKNOLOGI MULTIMEDIA DALAM KAJIAN SENI, BUDAYA DAN WARISAN DI PERKAMPUNGAN ETNIK BIDAYUH DI TAMAN NEGARA DATARAN BUNGO, BAU, SARAWAK

Researchers: Yakup Mohd Rafee, Sylvester Jusem, Awangko Hamden, Hisamudin Siri, Mohd Zamhari

Affiliation: Faculty of Applied and Creative Arts, UNIMAS

Synopsis: Kajian ini bertujuan untuk meneroka potensi dokumentasi visual kreatif dan teknologi multimedia digital dalam konteks penyelidikan seni, budaya dan warisan terutama berkaitan kaum Bidayuh di beberapa perkampungan kecil di dalam Taman Negara Dataran Bungo, Sarawak. Kawasan tersebut dihuni tiga kumpulan kecil Bidayuh yang bertutur melalui sub-dialek masing-masing iaitu Bidayuh Tebia yang bermastautin di tiga buah kampung, Bidayuh Krokong pula menghuni sembilan buah kampung, manakala kumpulan kecil Bidayuh Gumbang terdapat di dua buah kampung di Tringgus, Dataran Bungo. Kajian akan menumpukan kepada pengumpulan maklumat secara digital terutama berkaitan objek budaya, biografi etnik, persekitaran dan kemudahan sektor pelancongan yang terdapat pada ketiga-tiga etnik Bidayuh ini. Data-data terutama audio dan visual akan dikumpulkan melalui penggunaaan peralatan teknologi digital terkini seperti HD Camera, Drone, 360 Camera, Action Camera dan DSLR. Selain itu, pendekatan konvensional seperti temuramah, observasi dan lakaran juga akan turut digunakan. Seterusnya data yang diperolehi akan dianalisis berdasarkan kepada keunikan dan kepentingannya dalam konteks tertentu, sebelum digabungkan dengan pendekatan seni visual yang inovatif dan kreatif agar ianya mampu dijadikan satu inovasi dalam membantu pembangunan sesebuah komuniti luar bandar samada berkaitan sektor pelancongan, ekonomi mahupun komuniti. Perkongsian seni, budaya dan warisan juga akan disampaikan melalui pameran karya dengan penekanan kepada penyampaian maklumat melalui informasi digital dan karya seni interaktif, selaras dengan perancangan dan hala tuju kerajaan negeri Sarawak ke arah generasi K-Ekonomi dan pembangunan luar bandar.

2: SPATIAL PATTERN - THE AUDITORY AND VISUAL ARCHIVE OF BUNGO RANGE, SARAWAK, MALAYSIA

Researchers: Assoc. Prof Dr Hasnizam Abdul Wahid, Assoc. Prof Dr Tarmiji Masron, Mohd Affendi Azizan, Prof Dr Sinin Hamdan, Iran Amri Mussodiq

Affiliation: Institute of Design and Innovation, UNIMAS

Synopsis: The project attempt to record and audio and video document on preservation of sounds around the Bungo Range. Although it is known as secondary forest, there has never been a detail attempt on sound and visual documentation known documented or published. The project aimed to record and document the wildlife habitat in the secondary, logged as well as primary forest, which will form as the baseline archive of audio and video recording within the Bungo range. The diversity as well as the changing natural soundscape of the secondary, logged as well as primary forest, would be of specific interest in this project. The sound will be recorded binaurally in quadraphonic and preserve digitally at high definition (HD format) with particular detail of its acoustic environment. The audio and video recording will be conducted between 4 to 6 hours per day for each location identified through the density of its spatial content. Archiving of the recorded sonic and visual, will include digitization as well as geographical mapping of sounds and their location, where it was recorded as well as analysis spatial distribution of the recorded sounds.

3: ORAL TRADITION AS A MEANS TO PRESERVE LANGUAGE AND CULTURE: THE BENGOH STORY

Researchers: Yvonne Michelle Campbell, Florence G. Kayad, Damien anak Mikeng

Affiliation: Faculty of Language and Communication, UNIMAS

Synopsis: This study looks into the documentation, preservation and maintenance of oral traditions of the three Bidayuh groups residing in the Bengoh area - the Tringgus, Gumbang and Krokong. Data in the forms of oral traditions will be collected by means of ethnographic approach. Interviews with the Bidayuh elders will also be conducted to gain a deeper understanding of the oral traditions and their connection to the language and culture of the people. The data would be analysed in terms of the content of these oral traditions especially the indigenous knowledge which are deemed important by the people. Besides that, the language of these oral traditions would also be analysed focusing on the lexical items and figurative expressions that may reflect the cultural heritage and worldview of the people. By conducting this study, it is hoped that these oral traditions may not only be preserve and maintain but also disseminated to the younger generations.

4: IN SEARCH OF THE BIDAYUH JAGOI SUB-DIALECT OF KROKONG

Researcher: Jecky Misieng

Affiliation: Faculty of Language and Communication, UNIMAS

Synopsis: There is a lot of on-going effort to study and preserve the Bidayuh language and its dialects by various groups and individuals both from the people within as well as those without. Standardization and the teaching of the language in early school years are among the top suggestions being explored. One of the disadvantages of standardizing a language is the danger of making the many different varieties that exist to die out among the speakers. However, each of the major dialects and their subdialects deserve a place in the Bidayuh history and cultural preservation. One of the major dialects of Bidayuh is found in the district of Bau in the Kuching Division of Sarawak, one of the states in Malaysia which is called the Jagoi dialect. The Jagoi dialect is spoken by less than 30,000 people as reported by the census done in the year 2000. In the Jagoi variety, there also exists a number of sub-varieties and one of them is the focus of this study which is Krokong sub-sub-dialect spoken by people from villages namely Batu Spit, Peros, Pisa', Krokong. Blingging (Belimbin), Bijongon (Buta), Kaman, Bijuray (Monggag), Kidowon (Pedaun) and Pengkalan Tobang (Tebang) which are located along the upper reaches of the Sarawak River or Sungai Sarawak Kanan. It is a variety that is characterize by minor differences from the main Jagoi variety in terms of pronunciation, intonation and a number of lexical items. The main interest of the study is to examine closely at the sound system as well as the morphological structure of the Krokong subdialect. Tangible outcomes of this study would include a long-term storage and preservation of primary data, a publication of the findings, and a pronunciation dictionary of the subdialect both in print and on electronic media. As a side interest, a historical account of how the major settlements of the Bidayuh in Krokong came about will also be explored to put the study into proper perspective.

Theme: Digital economy

1: PREPARING BENGOH'S VILLAGES FOR DIGITAL ECONOMY

Researcher: Professor Dr. Narayanan Kulathuramaiyer, Dr. Johari bin Abdullah, Dr. Poline Bala, Mr. Kee-Man Chuah, Ms. Nurul Zawaiyah, Dr. Amit Pariyar, Ms. Farina Osman, Mr. Justin Peton Malik, Mr. Mohd Ismail, Mdm Nor Safura, Ms Evvia Veno.

Affiliation: Institute of Social Informatics and Technological Innovations (ISITI), UNIMAS

Synopsis: As digital economy becomes a buzz and a growing need for Malaysia to harness the limitless possibilities of Information and Communication Technologies (ICTs) interventions in shaping the economic prosperity and well-being of people, it becomes imperative to reflect upon the demands and service provisions for all sections of society. The geographical remoteness, heterogeneous cultures, multiple ethnicities, illiteracy, poverty are some of the challenges that demands a digital economy that is both inclusive and contextual. Numerous digital solutions have emerged to meet this need, notably 'MOOCs' as an online learning platform has become a sensation with its philosophy of democratizing education and shifting pedagogy from the traditional 'in-the-class' learning to 'anytime anywhere' lifelong learning using ICT. Foreseeing the advantage online platforms have in creating context-specific learning materials and empowering rural indigenous communities to become a digital citizen, we are proposing workshops at Bengoh to create awareness on digital economy, to help community design knowledge-based high value activities (tourism and handicrafts), and to identify community assets that needs strengthening. We will also provide basic trainings on photography and creating websites, demo e-learning tools 'Library in A Box' to evaluate the pedagogy and learning requirements, and collaborate with PIIM for e-Waste programme.

Theme: Environment

1: WATER RISK ASSESSMENT AS A TOOL FOR SUSTAINABLE DEVELOPMENT PLANNING: A CASE STUDY ON SPORA/PEDI RIVER BASIN DEVELOPMENT PROGRAMMES AT TRINGGUS

Researchers: Lau Seng, Wong Ru Sheong, Teo Kien Yung and Ong Kok Tong

Affiliation: Centre for Water Research, Institute of Biodiversity and Environmental Conservation, UNIMAS

Synopsis: Amid bringing development to the rural communities, it is more often than not, we experience negative impacts of the development and much disruption of ecosystem services. Most of these negative impacts are affecting the water resources of the development areas. Some examples of the impacts are flash floods, water/river pollution and scarcity of water during droughts. It has been frequently argued that prior to any development, environmental impact assessment (EIA) has been conducted and all the impacts would have been addressed. However, is a project based assessment and most often than not, the cumulative impacts of developments within a catchment is not been fully monitored. Hence, on its own a project will be environmentally viable but if the carrying capacity of the river basin is exited, environmental degradation will be inevitable. Therefore, it is proposed that an assessment on the water risk for a river basin be used as a tool for development planning. The objective of this study is to determine the water risks in terms of its physical, regulatory and reputational risks for Spora/Pedi River under the current land use scenario. The study will be conducted through measuring the hydrological features of the upper Spora river, the pollution loading from the various land uses. The regulatory risk will be determined by comparing the water quality of the river and the wastewater discharge from the villages with the national water quality and wastewater discharge standards. The reputational risk will be measured through social survey among the residents as well as the tourists to Sarawak. It is expected that the study will provide sufficient information on the physical, regulatory and reputational risks of its water resources for the present land uses. Recommendation of improvement strategies and potential development projects suitable for the area will be made.

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Bau District Council

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Bau District Police

Bau Fire and Rescue Station

Bau Hospital

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