

**PILIKUTHTHUWA CAVE FOREST: A CASE STUDY IN THE USE OF THE WATER
AND LAND RECREATION OPPORTUNITY SPECTRUM (WALROS)
INVENTORYING FRAMEWORK IN A NEAR URBAN FOREST**

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ABSTRACT

The Recreation Opportunity Spectrum (ROS) that considers the diversity of recreation experience (Brown 1978, Buist 1982, Clark 1979, Driver 1978) will help to improve the satisfaction of recreationists. This case study is a report of clarifying the present situation of the Pilikuththuwa Cave Forest (PCF) using the WALROS approach as an attempt to identify diversified recreation destination surrounding to capital of Sri Lanka. The study was conducted leading to key objective and three specific objectives respectively, to develop the map of the current WALROS with regard to PCF, to identify the existing recreation activities in PCF, to pick out recreation experiences that can be gained by PCF recreationists, and to categorize WALROS classes within the PCF. As the nature of the research the qualitative research approach was associated. Land area that has geographically unique phenomena was the research area which was consisted of 483830.108m². The land was systematically examined to understand the WALROS classes by dividing it into eleven polygons with the association of well-trained three research assistants on WALROS criterion. Current recreation users, area residents, head monk of the temple belonging to the area, officials of archaeological department and representatives of interest groups were interviewed other than the observations to understand the existing recreation activities. 11-point WALROS inventory scale was used in scaling the data and GIS software used to present and analysis the data. Out of six WALROS classes, four classes and ten existing recreation activities were identified in PCF. Nine, seven and eight activities were identified respectively in Rural Developed, Rural Natural and in Semi-primitive and Primitive areas. In this study the concept of WALROS was used only as a mapping tool. Based on the findings of the study it can conclude that the PCF area provides diversified recreational experiences via rural developed to primitive settings.

Key Words: *Water and Land Recreation Opportunity Spectrum, Diversified Experiences, Tourism Destination, Sri Lanka*

Introduction

Recreation defers from each and every person because the interests of a person relatively seem to be different from other. So, there is a diversification in recreational activities that people are engaging in different recreational deeds. Also there was a steady growth in leisure and outdoor recreation over three decades (Stankey and Wood, 1982). Therefore most of the time a lot of scholars have done studies on Recreation Opportunity Spectrum (ROS) and have used the ROS so as to provide diversified recreation opportunities for recreationists. Also, as WALROS was modeled after the ROS system and WALROS has taken the finest proven features of ROS and WALROS and updated, refined and tailored them for use on land and water (WALROS Handbook, 2011). So, concepts on ROS and WALROS were used throughout this research interchangeably to achieve the objectives of the research. Half a century ago, when people said they were going camping fishing or boating, it was clear what they intended. Today, due to many factors such as new technology and equipment, more facilities and diverse public tastes and preferences, there are many types of camping, fishing and boating activities. The outdoor recreation industry and profession have become much more complex and sophisticated (WALROS Handbook, 2011). So, it is an essential thing to use ROS frame work as the ROS is giving a chance for a person to participate in a specific setting in order to realize a predictable recreational experience (Stankey and Wood, 1982). And plenty of applications with different perspectives of the concept of ROS/ WALROS can be seen when looking into literature. Research has shown that recreationists not only seek to participate in recreation activities, but also seek specific recreation settings in order to enjoy a special kind of recreation experience and subsequent benefits. These four components (activities, settings, experiences and benefits) construct a recreation opportunity (WALROS Handbook, 2011).

If there are options for people to choose their recreation settings and activities to gain experiences or to choose recreation opportunities; the tourism industry regarding local and foreign recreationists/ travelers/ tourists will also be developed than the industry is expected. Because, “tourists pursuing outdoor recreation opportunities are also recreationists” (WALROS Handbook, 2011). Throughout this paper the words “tourist” and “recreationist” are used interchangeably. However, the rapid increase in the popularity of adventure, naturalist and outdoor travel, and the impacts of the increased commercialization of these travel opportunities have placed a great pressure on unique and significant natural resources. Much of the opportunity for outdoor experiences and adventure travel is located in remote, frontier areas which have not been planned or developed for tourism (Butler and Waldbrook, 2003).

When considering about Sri Lanka, high portion of travelers visit Sri Lanka aiming pleasure in terms of recreation and it divulges direction of tourism policy implication (Gunarathna et al., 2013). Even after the thirty years of civil war arrival of travelers were increased significantly. In 2012 there were 1,005,605 (Tourism Development Authority, 2012) travelers as a result of ceasing of war and MahindaChinthana Policy. Data meant that recreationists with different motives are highly available in context of Sri Lankan tourism or recreation industry. Furthermore, according to the Mahinda Chinthana Policy by the year 2016 one of the targets of tourism industry is to attract 2.5 million tourists annually (MahindaChinthana, 2010). Also,

specific strategies related to tourism in the five year master plan of Tourism Development Authority are discussed beneath under five main areas in focus: I. Creating an environment conducive for tourism. II. Attracting the right type of tourists to the country. III. Ensuring that departing tourists are happy. IV. Improving domestic tourism. V. Contributing towards improving the global image of Sri Lanka (Tourism Development Authority, 2011). And one of the objectives of “MahindaChinthana 2010” is to develop Sri Lanka as a dynamic global hub which includes Sri Lanka as a Naval Hub, an Aviation Hub, a Commercial Hub, an Energy Hub and a Knowledge Hub. When Sri Lanka is well-known as a global hub automatically Sri Lanka becomes a midpoint of world tourism.

Hence, there should be a technical way to provide diversified demands of travelers or recreationists while the Sri Lankan government policies are implementing their targets. It is recognized that the best way to respond to this growth is to provide a range or diversity of recreation areas so that the varying desires, preferences and needs of as many people as possible can be met (Stankey and Wood, 1982). WALROS is a standardized way to fulfill the demands of each recreationist while ensuring the departing tourists or recreationists are happy. For an example, the following literature emphasize of using of the concept of ROS/ WALROS in many ways so as to meet the requirements of recreationists around the world.[However, ROS is not a new idea (Finley, 1990). Concepts from which the ROS was developed have been in the literature for over 40 years (Brown et al 1978)].

World's literature emphasize that there were number of studies done by scholars on this scenario in different point of views. But there is a huge research gap in Sri Lanka. None of studies regarding ROS/ WALROS in Sri Lanka was identified. Even though there are achievable strategies within the government regarding tourism industry, there is no proper framework to supply quality recreational experiences for recreationists that can best be assured by providing diversity of recreation opportunities. So that, the aim of conducting this research is to fulfill the previously mentioned gap and to support the tourism strategies regarding Sri Lanka by introducing use of WALROS inventory mapping. However, Tourism was officially activated by the government of Sri Lanka in 1960s (Ranasinghe & Deshapriya, 2010) and since then tourism industry is playing a predominant role in national economy as a ‘multiplier’ [International arrivals in Sri Lanka have grown from 28,272 in 1968 to 1,005,605 in 2012 (Tourism Development Authority, 2012)] and it is believed that Sri Lankan tourism has flocked around Western province (Gunarathne et al., 2013).

If then, Western Province of Sri Lanka specially must provide a spectrum of recreational opportunities for the recreationists as the recreationists have diversified recreation patterns. Not only the recreation capacities identified and promoted in urban areas (U) of the western province but also the recreation capacities in sub urban areas (SU), rural developed areas (RD), rural natural areas (RN), semi-primitive areas (SP) and primitive areas (P) must be identified and promoted. To build up that process; with the aim of providing diversified opportunities for recreationists in an effective and professional way, WALROS can be applied. Although tourism plays a key role in the Sri Lankan economy (Ranasinghe and Deshapriya, 2010) the WALROS framework which has been used in developed countries is still not applied in relevant recreational industries in Sri Lanka. Hence, it is essential to apply WALROS

framework because “Sri Lanka is backed by a strong culture, historical artifacts, exotic beaches, green environment and friendly people, all of which are solid building blocks for tourism development” (Ministry of Economic Development, 2011) and Sri Lanka is a well-known nation for hospitality. While Sri Lanka tourism focuses on eight product categories such as; Beaches –Pristine, Sports & Adventure –Thrills, Heritage sites –Heritage, Mind and Body wellness –Bliss, Scenic beauty of the country –Scenic, Wild life & Nature –Wild, People & Culture –Essence, Year-round Festivals – Festive under the theme ‘8 wonderful experiences in 8 wonderful days’.

Among those categories, heritage sites are well demanded by domestic and international recreationists remarkably by virtue of the cultural heritage of Sri Lanka is well identified and established as its chronological history is well documented ever since 3c BC. PCF is also a heritage site and it has been identified as a pre historic habitation, while the temple erections are an eclectic mix of architectural periods in Sri Lanka, from the Kandyan to British. On the other hand PCF is located not more than 50 minutes from Colombo which means that PCF is inside the Western province that most of the recreationists or tourists are flock around. Specially, the travelers who are waiting for their transfers for a considerable time; can enjoy this nearby PCF tourism destination as it takes only half an hour from Katunayake International Air Port to PCF. Because PCF is situated in a near urban area and it is a recreational place while it has a proud interesting historic profile; it is more essential to introduce the concept of WALROS to PCF. Thence the tourism development projects or recreational development projects could achieve their future goals regarding PCF. According to the archaeological department of Sri Lanka there is plan on developing a tourism zone in PCF already. So, application of WALROS is a timely important requirement, because most of the recreationists who gathered around Western Province are more likely to have quick, clear and brief ways on choosing their recreation settings according to their interests. Even though the concept of WALROS is still in its infant stage in Sri Lanka; the use of WALROS is required as soon as possible because there are more demands for outdoor recreation opportunities in Sri Lanka and WALROS are a useful tool to meet with the diversified demands of recreationists while the demand for recreation opportunities are growing. Due to those circumstances we analyzed the possibility of applying the concept of WALROS as an inventory tool with special reference to PCF.

WALROS is an inventory tool, management tool and a planning tool. So the fundamental assumption made in this research was that diversified recreation opportunities and experiences can be identified in WALROS as an inventory tool. The case study on ‘Pilikuththuwa’ cave forest across the Water and Land Recreation Opportunity Spectrum was conducted to meet the following key objective which was to develop the map of the current Water and Land Recreation Opportunity Spectrum with regard to PCF and specific objectives which were to categorize Water and Land Recreation Opportunity Classes within the PCF, to identify the existing recreation activities in PCF and to pick out recreation experiences that can be gained by PCF recreationists.

Literature Review

Literature was referred to carry out a study on WALROS and its application. In this paper a few literature on some concepts of ROS and WALROS was reviewed because WALROS was modeled after the ROS system and WALROS has taken the finest proven features of ROS and WROS and updated, refined and tailored them for use on land and water (WALROS Handbook, 2011).

Recreation opportunity

Recreation opportunity (RO) is the opportunity for a person to participate in a particular recreation activity in a specific setting in order to enjoy a particular recreation experience and the benefits this affords (WALROS Handbook, 2011). The following insert depicts the linkage of the four components that define a recreation opportunity.

Table 1: Components of Recreation Opportunity

| | | | |
|------------------------|--|------------------------------------|--|
| Recreation Activity+ | Setting | Experience | Benefits |
| | = | >>> | |
| Many Activities | Physical Attributes Social Attributes Managerial Attributes | Many Dimensions Multiple Senses | Individual Community Economic Environmental |
| Managers Manage | Recreationists Consume | Society Gains | |

Source: (WALROS Handbook, 2011)

The Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a concept which has received increasing attention in the resource management and wilderness recreation literature (Butler R.W. and Waldbrook L.A., 2003). The Recreation Opportunity Spectrum (ROS) is one of the most powerful recreation inventory tools ever devised (More et. al, 2003). ROS can be used to inventory existing opportunities, analyze the effects of other resource activities, estimate the consequences of management decisions on planned opportunities, link user desires with recreation opportunities, identify complementary roles of all recreation suppliers, develop standards and guidelines for planned settings and monitoring activities and help design integrated project sets for Forest Plan implementation(ROS Primer and Field Guide, n.d).

The Water and Land Recreation Opportunity Spectrum

The Water and Land Recreation Opportunity Spectrum (WALROS) is a tool to understand the type and location of six types of land and water-related recreation opportunities. There are six WALROS classes ranging across a spectrum of urban, suburban, rural developed, rural natural,

semi-primitive, and primitive recreation opportunities. WALROS enables an inventory and mapping of the six recreation opportunities by using expert opinion. An inventory protocol can be used to assess the physical, managerial, and social attributes of the setting. The chart below illustrates attributes that differentiate the six WALROS classes.

Table 2: Attributes that Differentiate the Six WALROS Classes

| Physical attributes | Social attributes | Managerial attributes |
|---|---|---|
| <ul style="list-style-type: none"> • Degree of major development • Distance from major development • Degree of natural resource modification • Sense of closeness to a community • Degree that natural ambiance dominates the area | <ul style="list-style-type: none"> • Degree of visitor presence • Degree of visitor concentration • Degree of recreation diversity • Degree of solitude and remoteness • Degree of non-recreational activity | <ul style="list-style-type: none"> • Degree of management structures • Distance to developed recreation facilities and services • Distance to developed public access facilities • Frequency of seeing management personnel |

Source: (WALROS Handbook, 2011)

The overarching goal of WALROS is to provide planners and managers with a framework and procedure for making better decisions in order to conserve a spectrum of high-quality and diverse water- and land-based recreation opportunities (WALROS Handbook, 2011). WALROS is a spectrum of six classifications of recreation opportunities. There are six integrated packages containing appropriate activities, settings, experiences, and benefits for each WALROS class. Following table identifies the classifications and components of a recreation opportunity.

Table 3: The WALROS Spectrum

| Spectrum Descriptions | A Spectrum of Six WALROS Classifications | | | | | |
|---|--|----------|--------------------|------------------|--------------------|-----------|
| | Urban | Suburban | Rural Developed | Rural Natural | Semi- primitive | Primitive |
| Recreation Activities | ← Integrated Packages → | | | | | |
| Recreation Setting | | | | | | |
| <ul style="list-style-type: none"> • Physical Attributes • Social Attributes • Managerial attributes | | | | | | |
| Recreation Experiences | | | | | | |
| Recreation Benefits | | | | | | |

Source: (WALROS Handbook, 2011)

Research Methodology

To meet the objectives of the research qualitative research approach was used. PCF Land area that has geographically unique phenomena was considered as sample area which was consisted of 483830.108m² and it was divided into eleven zones (polygons) based on geographical specifications to complete WALROS inventory protocol by far. And a polygon was the sample unit of this case study. The eleven polygons were systematically examined to understand the WALROS classes with the association of well-trained three research assistants on WALROS criterion. Techniques such as interactional recording, tape recording and photography were used in participant observation because the ROS mapping requires a clear awareness of the subject area. Snapshots which were taken during the field survey were another source of data, because the photos extremely contributed in further clarifications as well as completing the inventory protocol. Interviews were conducted using independent observers in PCF as a technique of mass observation. Personal interviews with open ended questions were conducted with a detailed schedule as a technique. Also, as a technique the researcher focused attention upon a given experience and its effects and focused interviews were done. Group interviews with small groups of respondents were done simultaneously. WALROS Inventory Protocol is kind of an attitude scale which leads to the data collecting method of opinionnaire. While observing the field during the field surveys; observations were included to WALROS inventory protocol as the protocol was the compass to go for WALROS classifications.

GPS was used to fulfill the pre requirement of mapping and mapped the routes where the team visited for surveys to develop the hiking trail. Photographs were also taken using the GPS. GPS coordinates that were taken according to Kandawala Coordinate Centre were used to identify inventory sites and the trail more accurately. Because the WALROS inventory must fit into any existing GIS database we checked whether there was a minimum of 160 acres for WALROS inventory mapping. Case study and life history method was also employed by using primary and secondary data. Primary data such as inscriptions, folk stories etc. were considered to identify the significance of Pilikuththuwa cave forest. Divisional and area maps, historical books such as '*GampahaCharika*', and historical journals, E-publications etc. were also referred as secondary data sources.

The data was processed to develop the WALROS map with the trail under following concentrations by using previously mentioned methods of data collection. (1) Recreation settings that could be found in study area. (2) Recreational activities that could be found in study area. (3) Recreational experiences that can be gained by recreationists from the area. To conduct data processing and scaling, complete attention on guide lines of WALROS handbook 2011 were adopted. The scale of degree in the WALROS hand book which was also used as the scale of degree in the WALROS is intended to help standardize the measurement of physical, social and management attributes for each WALROS class. The scale of degree contains several qualitative terms and a quantitative expression and the scale of degree that had been used can be identified through below table.

Table 4: The WALROS Scale of Degree

| Urban (U) | Suburban (SU) | Rural Developed (RD) | Rural Natural (RN) | Semi Primitive (SP) | Primitive (P) |
|-----------|----------------|----------------------|--------------------|---------------------|---------------|
| 80-100% | 50-80% | 20-50% | 10-20% | 3-10% | 0-3% |
| Dominant | Very Prevalent | Prevalent | Occasional | Minor | Very Minor |

Source: (WALROS Handbook, 2011)

Table 5 was the system which used for scaling of WALROS types and classes. The scaling was done based on all the judgments of raters regarding five physical, six social and four managerial attributes through WALROS inventory protocol. The raters had put moderate level of detail, intensity, effort, data, time and precision over all the polygons. There was no formula or mathematical calculation to arrive at this overall judgment for the area.

Table 5: WALROS Inventory Scale

| Rate | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|----------|---|---|----|---|----|---|----|---|----|----|----|
| Category | U | | SU | | RD | | RN | | SP | | P |

Source: (WALROS Handbook, 2011)

Depending on the data gathered through Level 2 WALROS analysis the data was categorized in a way which is known as WALROS classes. Ratings that led to classify the WALROS classes are shown in Table 6.

Table 6: Ratings that Led to WALROS Classifications

| Zone | Rating of Rater A | Rating of Rater B | Rating of Rater C | Overall Rating | WALROS Classification |
|------|-------------------|-------------------|-------------------|----------------|-----------------------|
| Z1 | 11 | 11 | 10 | 10.6 | P |
| Z2 | 6.5 | 6.5 | 7 | 6.6 | RN |
| Z3 | 7.2 | 7 | 7.3 | 7.07 | RN |
| Z4 | 4.5 | 5.3 | 4 | 4.6 | RD |
| Z5 | 5 | 5.6 | 5.5 | 5.33 | RD |
| Z6 | 10 | 9.5 | 8.2 | 9.23 | SP |
| Z7 | 6.8 | 7.1 | 7.3 | 7.06 | RN |
| Z8 | 6.5 | 6.8 | 7 | 6.73 | RN |
| Z9 | 5.1 | 6.3 | 5.5 | 5.63 | RD |
| Z10 | 6 | 5.3 | 5.2 | 5.5 | RD |
| Z11 | 7 | 7.5 | 7 | 7.16 | RN |

Source: (Survey Data, 2013)

Analyzed data was presented in a map, which is usually known as WALROS map including the introduced hiking trail. And the process of analysis is shown in Figure 1.

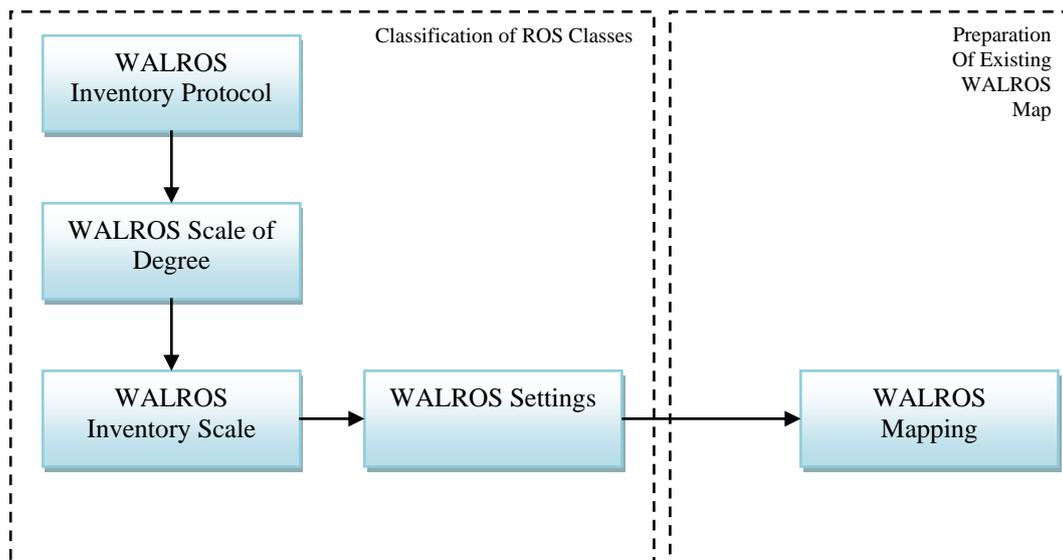


Figure 1: Process of Analysis

Research Results

Out of six WALROS classes, four WALROS classes namely RD, RN, SP and P were identified at the PCF area. Out of the four WALROS classes, RN was the largest setting which is 184844m². The smallest WALROS class was the Primitive (P) setting that consisted 79865.3 m². 38%, 36%, 17% and 9% of land's area was belonged to RN, RD, SP and P classes respectively. Ten existing recreational activities had found in WALROS, PCF. All the activities were land-based activities and the availability of recreational activities was varied across the spectrum. Nine and seven activities was identified respectively in Rural Developed and Rural Natural Setting and eight activities was recognized both in Semi-primitive and Primitive settings.

Finally, there could be identified diverse number of activities that could gain the experiences which had identified across the WALROS, PCF as briefed by the table below. Consistent with the table there can obtain thirty one different types of experiences through the available recreation activities at the PCF. The table explains the diversification of experiences, even though different experiences could be gained by engaging in same recreational activity across WALROS within PCF. For an instance, “enjoying the outdoors” is an experience that can be gained by twenty four different ways. So, it is clear that there are four hundred and sixty eight ways to feel all the thirty one identified experiences across the WALROS within PCF.

Also we could successfully identify the WALROS map in PCF area including four settings and ten recreational activities.

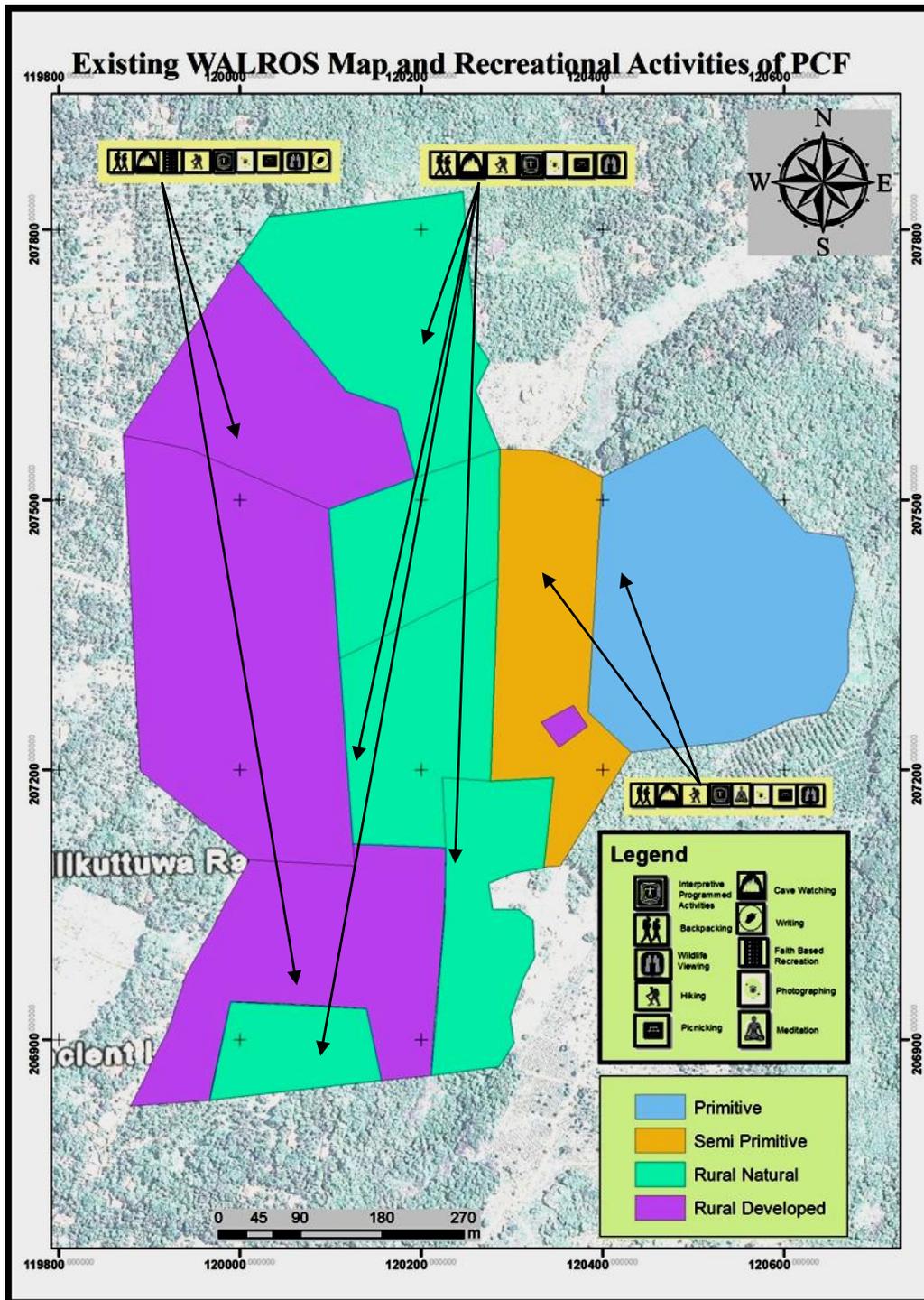


Figure 2: Existing WALROS Map and Recreational Activities

Discussion

Based on the findings of the research, several discussions can be made to apply the concept of WALROS with further modifications. Maps are effective visual planning and management tools for use at public meetings, at entrance stations, on bulletin boards and in visitor brochures. PCF must have effective visual planning and management tools. As a recreation

point of near urban area in Sri Lanka more development is needed regarding PCF as it has a wide range of recreation opportunities. Further tourism strategies must be applied as PCF has the potential to grow as a popular tourist destination due to its existing WALROS.

Conclusion

Based on the results of the case study it can conclude that Pilikuththuwa Cave Forest area provides diversified recreational opportunities and experiences via Rural Developed to Primitive settings.

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