

The Necessity of Introducing Recreation Based Land Mapping in Sri Lanka

K Jayantha

*PhD Student, Faculty of Management Studies and Commerce
University of Sri Jayewardenepura, Sri Lanka
kala@kln.ac.lk*

U Anura Kumara

*Faculty of Management Studies and Commerce
University of Sri Jayewardenepura, Sri Lanka*

Abstract

Finding different experiences is the inherent nature of humankind though the expected experiences are different from each other. Considering these different expectations of the humankind, various types of facility suppliers, have attempted to supply unique products or services or a product series with adjoining differences. The objective of this paper is to discuss of a mechanism viz., recreation opportunity spectrum (ROS) which leads to provide adjoining differences in a same land area. As this mechanism comprehends the land differences based on recreationists'/tourists' notion, the paper supports to expand both recreation and tourism industry. It is significant to discuss the ROS technique at this moment which conterminous with Sri Lankan development strategies. This concept paper discusses about ROS based on what, why, where, who, and how questions based on a literature survey. In conclusion, there are adequate opportunities to multiply land values by introducing multiple usages of same lands by applying ROS mapping in Sri Lanka.

Keywords: Recreation Opportunity Spectrum, Recreation and Tourism Industry, Land Value

Introduction

A vast area such as the concept of ROS and its relation to Recreation Resource Inventory (RRI), the scope of ROS/WALROS, Sri Lankan land use patterns, Sri Lankan tourism strategies and the necessity of developing ROS/WALROS mapping in Sri Lanka are briefly discussed in this paper. Introduction to the concept of ROS/WALROS is comparatively hefty of this paper, as the concept is novel to Sri Lankan community even though many of the world community are aware of this concept. Under several circumstances traditional exports in Sri Lanka (Tea, Coconut and Rubber) are insufficient to balance the foreign trade. This situation forces to look for alternative market opportunities. As an alternative, exporting skilled and unskilled labor strengthen foreign income source to some extent though that caused some cultural issues especially in the Middle East women's labor market. The apparel industry is also in a challenging situation that has to face blockades of the European Community. Such circumstances influenced strategic planners to look for tourism industry with higher expectation as an alternative foreign income source. Thus, former Government had set a target to attract 2.5 Million high spending tourists by the year 2016 (*Tourism Development Strategy 2011 – 2016*). Setting aside analyzing achieving of effectiveness of the set target it is important to discuss the mechanism that the planners designed to welcome 25 million tourists and absorb foreign income to the nation. To manage 25 million people, approximately 1/8 of the country population need to have a proper plan other than the accommodations. Otherwise, tourism in Sri Lanka may have negative impacts than benefits. Thus, existing tourism destinations should be developed and new destinations should be identified. water and land recreation opportunity spectrum (WALROS) and tourism opportunity spectrum (TOS) that are extension of ROS: a mapping tool would help previously mentioned step.

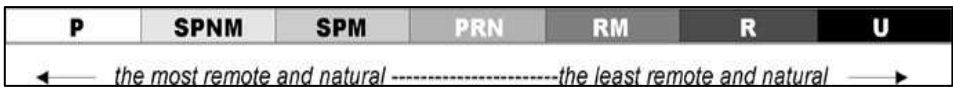
To develop and create new tourist destinations, the academic community has a major role to play. Understanding and disseminating theoretical knowledge, enhancing theatrical and practical knowhow of the community, shaping intellectuals with capabilities to welcome new tourism atmosphere,

rebuilding existing recreation and tourism destinations with new concepts and recognizing new destinations are some responsibilities that academics have to satisfy the emerged necessity in tourism industry. With the intention of developing such a background, the concept ROS should be encouraged to practice by providing theoretical and practical support. ROS was developed as a forestland-mapping tool based on spectrum of recreation opportunities. Yet, the later developments of ROS expanded its horizons by mapping land, water and air. As ROS is a spatial mapping tool, there are no restrictions to develop ROS/WALROS/TOS on any spatial area. Only condition is to have a scientific approach based on basic principles of ROS. ROS designers are allowed to re-arrange or modify ROS criteria under special requirements and

The concept of ROS/WALROS

ROS is a tool used to support definition and management of diverse outdoor recreation opportunities. “The recreation opportunity spectrum provides a framework for integrating recreational opportunities and non-recreational activities” (Roger N. Clark, 1979).

Figure1 - Relationship between ROS classes

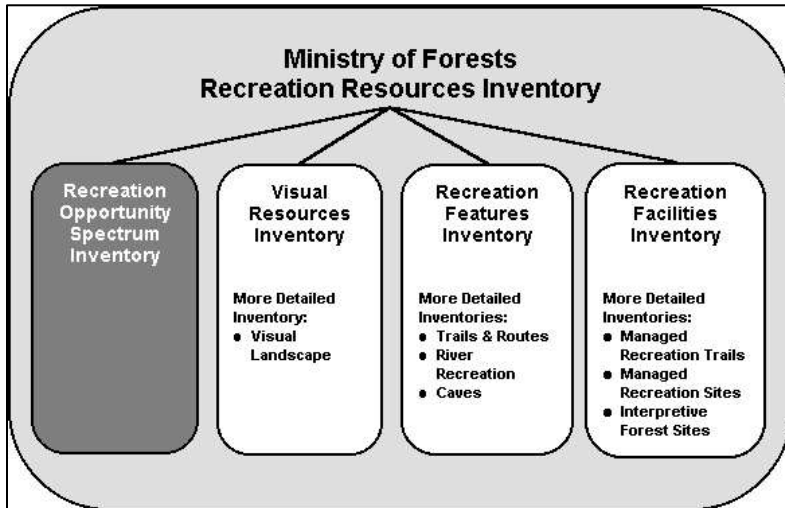


Source: Recreation Opportunity Spectrum Inventory Procedures and Standards Manual, YEAR, (n.d.)

ROS offers a framework for understanding these relationships and interactions (See figure 1). The Spectrum has been divided into six major classes for forest service use such as Urban (U), Rural (R), Roaded Modified (RM) in some areas, Roaded Natural (RN), Semi-Primitive Non-Motorized (SPNM), Semi-primitive Motorized (SPM), and Primitive (P). Maintaining a broad spectrum of these classes is important to provide choices for people. ROS is flexible to be subdivided into subclasses whenever a need arises (ROS Primer and Field Guide).

ROS was established concurrently by two groups of researchers: Clark and Stankey (1979) and Brown, Driver, and associates (Brown et al. 1978, Driver and Brown 1978, Brown et al. 1979). WALROS is a tool to understand the type and location of six types of water-related recreation opportunities (WALROS classes). The six WALROS classes range across a spectrum of urban, suburban, rural developed, rural natural, semi-primitive, and primitive recreation opportunities. A particular “package” of activities, setting attributes, experiences, and benefits, defines each WALROS class (WALROS Users’ Handbook, 2011).

Figure 2- ROS as a part of RRI



Source: Recreation Opportunity Spectrum Inventory - Procedures and Standards Manual, n.d.

Figure 2 illustrates the components of the Recreation Resource Inventory (RRI). As the figure clearly illustrates ROS is an inventory out of four RRI inventories viz., recreation opportunity spectrum inventory, visual resource inventory, recreation feature inventory and recreation facilities inventory.

Table 1. The scale of degree of major development used in WALROS

Urban	Suburban	Rural developed	Rural natural	Semi-primitive
80-100%	50-80%	20-50%	10-20%	3-10%
Dominant	Very prevalent	Prevalent	Occasional	Minor
Extensive	Widespread	Common	Infrequent	Little
A great deal	Very obvious	Apparent	Periodic	Seldom
Extremely	Very	Moderately	Somewhat	Slightly

Source: WALROS Users' Handbook, (2011)

The Scope of ROS/WALROS

ROS/WALROS is not restricted to forestland though the concept was developed based on forestlands [As Roger and Stankey (1979) presented the original form of ROS is laying with forest lands]. Today the concept has been expanded to any kind of land, water and air. Then the concept was prolonged to water related recreation activities by introducing WALROS as a tool to understand six settings of water-related recreation opportunities. The six WALROS classes range across a spectrum of urban, suburban, rural developed, rural natural, semi-primitive, and primitive recreation opportunities (Users' Handbook, 2009). Then the concept expanded to park areas. Turning the original form of ROS, ROS users started line mapping. Classifying trails in Daisetsuzan National Park, Japan, using ROS approach by Kazushige Yamaki & Yasushi Shoj (2004) is an example for the use of line mapping. ROS is a framework that is widely used to guide outdoor recreation planning and management, and suggests how this framework might be applied to transportation. Peter R. Pettengill, Robert E. Manning (2011). Application of ROS concept in Colorado and Arkansas Rivers in Colorado by Duane C Wollmut et al. (1985) showed the usefulness of ROS in broader levels of planning and the needs of more detailed levels of planning.

Table 2 - ROS Polygon Delineation Standards

ROS Class	Factors					
	Remoteness		Naturalness		Social Experience	
	Distance from road (km)	Size (ha)	Motorized Use	Evidence of Humans	Solitude/Self-reliance	Social Encounters
Primitive (P)	> 8	> 5000 ha	Occasional air access, otherwise no motorized access or use in the area.	<ul style="list-style-type: none"> • very high degree of naturalness; • structures are extremely rare • generally no site modification • little on-the-ground evidence of other people • evidence of primitive trails 	<ul style="list-style-type: none"> • Very high opportunity to experience solitude, closeness to nature; self-reliance and challenge. 	<ul style="list-style-type: none"> • very low interaction with other people; • very small party sizes expected;
Semi-Primitive Non-Motorized (SPNM)	≥ 1	≥ 1000 ha	<ul style="list-style-type: none"> • generally very low or no motorized access or use • may include primitive roads and trails if usually closed to motorized use 	<ul style="list-style-type: none"> • very high degree of naturalness; • structures are rare and isolated except where required for safety or sanitation • Minimal or no site modification. • Little on-the-ground evidence of other people. 	<ul style="list-style-type: none"> • high opportunity to experience solitude, closeness to nature, self-reliance and challenge. 	<ul style="list-style-type: none"> • low interaction with other people; • very small party sizes expected;
Semi-Primitive Motorized (SPM)	≤ 1	≤ 1000 ha	<ul style="list-style-type: none"> • A low degree of motorized access or use. 	<ul style="list-style-type: none"> • high degree of naturalness in the surrounding area as viewed from access route; • structures are rare and isolated • Minimal site modification. • some on-the-ground evidence of other people • evidence of motorized use 	<ul style="list-style-type: none"> • high opportunity to experience solitude, closeness to nature, self-reliance and challenge. 	<ul style="list-style-type: none"> • low interaction with other people; • small party sizes expected;

Roaded Natural (RN)	≤ 1	N/A	<ul style="list-style-type: none"> • Moderate amount of motorized use within the area. • may have high volume of traffic through the main travel corridor. 	<ul style="list-style-type: none"> • moderate degree of naturalness in surrounding area • structures may be present and more highly developed; • Moderate site modification. • some on-the-ground evidence of other people, • Some on-site controls. • typically represent main travel corridors and recreation areas that have natural-appearing surroundings 	<ul style="list-style-type: none"> • Moderate to high opportunity to experience solitude, closeness to nature, self-reliance and challenge. 	<ul style="list-style-type: none"> • moderate interaction with other people; • small to large party sizes expected;
Roaded Modified (RM)	≤ 1	N/A	<ul style="list-style-type: none"> • Moderate to high degree of motorized use for both access and recreation. 	<ul style="list-style-type: none"> • low degree of naturalness; • moderate number of more highly developed structures; • Highly modified in areas; generally dominated by resource extraction activities. • On-the-ground evidence of other people and on-site controls. 	<ul style="list-style-type: none"> • Low to moderate opportunity to experience solitude, closeness to nature, self-reliance and challenge. 	<ul style="list-style-type: none"> • moderate to high interaction with other people; • moderate to large party sizes expected;
Rural (R)	≤ 1	N/A	<ul style="list-style-type: none"> • High degree of motorized use for both access and recreation. 	<ul style="list-style-type: none"> • very low degree of naturalness; • Complex and numerous structures, high concentrations of human development and settlements associated with agricultural land. • Obvious on-the-ground evidence of other people and on-site controls. 	<ul style="list-style-type: none"> • Low opportunity to experience solitude, closeness to nature, self-reliance and challenge. 	<ul style="list-style-type: none"> • high interaction with other people; • large party sizes expected;
Urban (U)	≤ 1	N/A	<ul style="list-style-type: none"> • Very high degree of motorized use for both 	<ul style="list-style-type: none"> • very low degree of naturalness; • highly developed and numerous structures 	<ul style="list-style-type: none"> • Very low opportunity to experience 	<ul style="list-style-type: none"> • very high interactions with

			access and recreation.	associated with urban development; <ul style="list-style-type: none"> • Very high site modification. • Obvious on-the-ground evidence of other people and on-site controls. 	e solitude, closeness to nature, self-reliance and challenge.	other people; <ul style="list-style-type: none"> • very large party sizes expected;
--	--	--	------------------------	--	---	---

Source: Recreation opportunity spectrum inventory: Procedures and Standards Manual- 1998

Water Land Major Usages in Sri Lanka

Total forest area (1000 ha) and planned forest cover (1000 ha) was 185 by the year 2010 (Butler, 2006) And total protected areas are amounting to 798737 ha (12.2 out of total land area) which included Biosphere reserves, Ramsar wetlands, world heritage sites, national parks, strict national reserves, national reserves, jungle corridors, and sanctuaries (Michael J.B. Green, 2010). Table 3 shows protected areas administrated by the Forest Department and Department of Wildlife Conservation which is the main responsible body of natural lands in Sri Lanka. In addition, tea lands (212716 ha) and rubber lands (287814 ha) (statistics.gov.lk) were under main agricultural lands. 103 river basins, mainly starting from the hill country, *Wawa* and other water bases, major faddy lands, hiking trails including Adam’s peak faith based hiking trail, water and land areas are being used or have the possibility to use as recreational areas in Sri Lanka. Furthermore, table no 3 and 4 exhibit protected areas administrated by the Forest Department and Department of Wildlife Conservation and visitor arrivals volume and revenue of national parks in 2011 respectively.

Table 3: Protected Areas Administrated by the Forest Department and Department of Wildlife Conservation

Protected Area Category	Area under each category (ha) in 2010
Forests under the Forest Department (FD)	
National Heritage Wilderness Area [N = 1]	11,127

Conservation Forests [N = 65]	96,249
Other Reserved Forests [N = 366]	630,701
Forest Plantations	79,941
Total Areas under the FD	818,018
Forests under the Department of Wildlife Conservation (DWLC)	
National Parks [N=22]	526,156
Nature Reserves [N=4]	57,056
Sanctuaries [N=61]	349,105
Strict Natural Reserves [N=3]	31,575
Jungle Corridors [N=1]	8,777
Total Areas under the DWLC	972,669

Source: Sri Lanka REDD+ Readiness Preparation Proposal, 2012

Table 4: Visitor Arrivals Volume and Revenue to National Parks 2011

National Park	Foreign Tickets		Local Tickets		Total no. of Visitors	Total Revenue (Rs.)
	No. of Visitors	Revenue in (Rs.)	No. of Visitors	Revenue in (Rs.)		
Yala	98,583	154,310,770.10	216,666	12,453,959.00	315,249	166,764,729.10
Horton Plains	29,854	50,103,251.89	166,818	8,971,550.00	196,672	59,074,801.89
Udawalawa	19,901	33,531,189.50	57,024	3,252,161.00	76,925	36,783,350.50
Minneriya	23,220	38,342,350.00	36,449	2,120,070.00	59,669	40,462,420.00
Hikkaduwa	5,958	170,415.00	46,011	216,275.00	51,969	386,690.00
Pigeon Island	4,185	4,456,160.00	31,035	1,190,610.00	35,220	5,646,770.00
Wilpattu	2,322	3,881,279.00	22,972	1,309,710.00	25,294	5,190,989.00
Wasgamuwa	367	403,170.00	18,732	697,230.00	19,099	1,100,400.00
Kumana	820	906,725.00	16,277	731,640.00	17,097	1,638,365.00
Kaudulla	8,331	9,458,461.00	7,374	292,480.00	15,705	9,750,941.00
Bundala	4,780	5,314,700.00	6,616	256,830.00	11,396	5,571,530.00
Horagolla	4	4,400.00	4,895	190,290.00	4,899	194,690.00
Lunugamwehera	27	29,826.00	2,703	99,880.00	2,730	129,706.00
Gal Oya	118	23,760.00	1,580	36,180.00	1,698	59,940.00
Angammedilla	0	-	1,483	52,590.00	1,483	52,590.00
Galwaysland	39	42,000.00	1,182	362.00	1,221	88,362.00
Lahugala	25	28,000.00	172	6,230.00	197	34,230.00
Maduru Oya	2	2,250.00	109	4,824.00	111	7,074.00
Total	198536	301,008,707.49	638,098	31,928,871.00	836,634	332,937,578.49

Source: H.M.M.C. Senevirathna and P.K.P. Perera, (2013) **Wildlife Viewing Preferences of Visitors to Sri Lanka's National Parks: Implications for Visitor Management and Sustainable Tourism Planning**, *Journal of Tropical Forestry and Environment* Vol. 3, No. 02 (2013) 1-10

Local and foreign tourist targets in Sri Lanka

International tourists' arrival in the recent years viz., 2010, 2011, 2012, 2013 and 2014 arise gradually such as 654476, 855975, 1005605, 1274593 and 1577153 respectively (Statistical abstract, 2010 – 2014). However, the target of attracting 2.5 million tourists annually, by 2016 (Tourism Development Strategy 2011 – 2016) was not achieved. Moreover, the exchange earnings by tourist industry in 2013 were 221147 LKR. Expected income in 2014 was 317501 LKR. Direct employment in 2013 and 2012 were 112555 and 67862 respectively (Annual statistical report 2014- Sri Lanka Tourist Development Authority).

The necessity of developing ROS/WALROS mapping in Sri Lanka

Above facts and figures evidence the booming nature of tourism and recreation industry in Sri Lanka. Consequently, the tools which can improve visitor satisfaction, and motivation have to be implemented. ROS/WALROS is a tool that necessarily should be specially introduced in water and land bases in Sri Lanka. Hence, is needed to research on ROS/WALROS based mapping. Though the first ROS based study has done by peiris (2014), in Sri Lanka, researchers who are responsible for the development of Sri Lankan tourism, and recreation industries and land and water base authorities should pay their attention on this matter in future.

References

- a) *Annual statistical report 2014- Sri Lanka Tourist Development Authority*
- b) *Brown, P., B. Driver, et al. (1978). "The opportunity spectrum concept in outdoor recreation supply inventories: Background and application." Proceedings of the Integrated Renewable Resource Inventories Workshop USDA Forest Service General Technical Report RM-55: 73-84.*
- c) *Brown, P., B. Driver, et al. (1979). "The outdoor recreation opportunity spectrum in wild land recreation planning: Development and application." First Annual National Conference on Recreation Planning and Development: Proceedings of the Speciality Conference 2(Washington D.C. Society of Civil Engineers): 1-12.*

- d) *Butler, Rhett. (n.d.). Retrieved from: http://rainforests.mongabay.com/deforestation/2000/Sri_Lanka.htm#01-cover, Access on 27. November 2016*
- e) *Duane C. Wollmuth, John H. Schomaker, and Lawrence C. Merrim, Jr (1985) River Recreation Experience Opportunities in two Recreation Opportunity Spectrum (ROS) Classes, Water Resources Bulletin, American Water Resources Association, VOL. 21, NO. 5*
- f) *H.M.M.C. Senevirathna and P.K.P. Perera, (2013) Wildlife Viewing Preferences of Visitors to Sri Lanka's National Parks: Implications for Visitor Management and Sustainable Tourism Planning, Journal of Tropical Forestry and Environment Vol. 3, No. 02 (2013) 1-10*
- g) *Kazushige Yamaki & Yasushi Shoji (2004) Classification of trail settings in an alpine national park using the Recreation Opportunity Spectrum approach, Working Papers of the Finnish Forest Research Institute 2 <http://www.metla.fi/julkaisut/workingpapers/2004/mwp002.htm>, accessed on 27 November 2016*
- h) *Michael J.B. Green (2010) IUCN Directory of South Asian Protected Areas: The World Conservation Monitoring Centre, IUCN Commission on National Parks and Protected Areas, <http://www.archive.org/details/iucndirectoryofs90gree>, accessed on 27. 11. 2016*
- i) *Peiris, D. L. I. H. K. & Jayantha, K. (2014). 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. International Journal of Social Sciences and Entrepreneurship, 1 (10), 348-360.*
- j) *Peter R. Pettengill, Robert E. Manning (2011) Literature Review, A Review of the Recreation Opportunity Spectrum and its Potential Application to Transportation in Parks and Public Lands*
- k) *Recreation Opportunity Spectrum Inventory -Procedures and Standards Manual <https://www.for.gov.bc.ca/hts/risc/pubs/culture/ros/ros98-ric-03.htm>, Access on 27 November 2016*
- l) *Recreation opportunity spectrum inventory: Procedures and Standards Manual- 1998, ISBN 0-7726-3708-3, <http://www.for.gov.bc.ca/ric>, access on 27. 11. 2016*

- m) Roger N. Clark and George H. Stankey (1979) The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research, U.S. Department of Agriculture Forest Service*
- n) ROS Primer and Field Guide (1990) United States Department of Agriculture, Forest Service*
- o) Statistical abstract, (2010 – 2014) Department of Census and statistics, Table 17.1: Tourist arrivals by country of nationality.*
- p) Tourism Development Strategy 2011 – 2016, Ministry of Economic Development*
- q) Tourism Development Strategy 2011 – 2016, Ministry of Economic Development*
- r) Users' Handbook, (2009) Water and Land Recreation Opportunity Spectrum (WALROS), Second Edition, Aukerman, Haas, and Associates, LLC*
- s) Water and Land Recreation Opportunity Spectrum (WALROS) Users' Handbook, (2011) Second Edition, U.S. Department of the Interior Bureau of Reclamation*
- t) www.statistics.gov.lk/agriculture/tea/all.pdf, Accessed on 27.11. 2016*