

TROPICAL ECOLOGE DESIGN MANUAL

by

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A REPORT

submitted in partial fulfillment of the requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

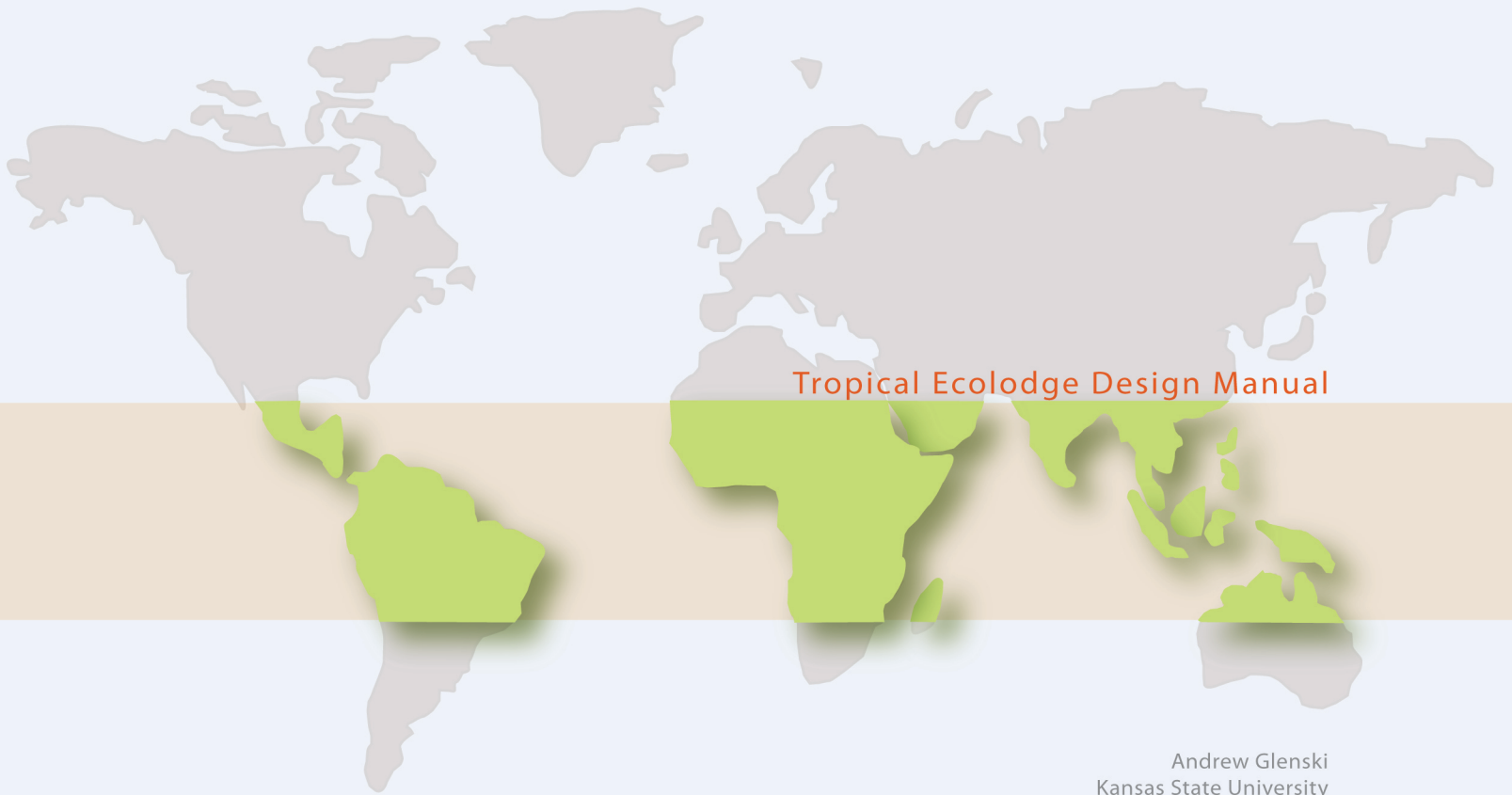
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Tropical Ecolodge Design Manual

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“having dreams is what makes life tolerable”

- Rudy

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How to Use This Book

The digital version of this book was designed to allow a reader to effectively navigate through the book with a series of strategically placed hyperlinks. Hyperlinks are instituted to allow readers to easily jump to and from different chapters and the sections found within the design manual. The hyperlinks allow a reader to follow a principle in the Fitness Design chapter, see how selected criteria have been implemented in existing ecolodges, then finally, understand how to evaluate the selected principle in the Evaluation of Fitness Design chapter. On the other hand, if a reader would like to skip around the manual to read information pertinent to their ecolodge design, the hyperlinks will allow the reader to efficiently flow through the manual.



These graphics are placed throughout the fitness design chapter, implementation chapter and evaluation chapter. Each letter, within the box, corresponds to the chapter a reader will be directed to.

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Abstract

The International Ecotourism Society (TIES), the world's first ecotourism organization, coined what has become the most succinct definition of ecotourism: "Responsible travel to natural areas that conserves the environment and improves the wellbeing of local people (Honey 2008, p. 6)." Ec lodges are accommodation facilities within ecotourism destinations which must satisfy specific principles, while reflecting the definition of ecotourism. Ec lodge principles include water conservation, preservation of flora and fauna, design to create a small footprint, and interpretive programs to educate both employees and tourists about the surrounding natural and cultural environments, to name just a few. (Mehta 2002, p. 5)

Tropical locations, where ec lodges are often found, are comprised of unique ecosystems. With tropical locales, there are specific considerations that could determine the success of a proposed ec lodge development. As a designer, one must understand the biophysical characteristics on site, to inform design decisions of the ec lodge development. In addition,

a designer must understand how the indigenous populations utilize the site culturally, physically and spiritually to fully understand the importance of the ec lodge development. (Mehta 2002, p. 12) When proper analysis of cultural and biophysical factors is completed, an ec lodge development is able to conform to the ecotourism definition and satisfy ec lodge principles.

Within this manual, a hierarchal list of design principles, guidelines and criteria are communicated to achieve an overall design goal called fitness design. A "fit" design is intended to achieve sustainability and quality of life for the environment and the communities that have daily interaction with the development. As readers navigate through the document, they will be exposed to various considerations of a tropical ec lodge development. The intent of the manual is to provide a structural framework to guide an ec lodge design process.



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Dilemma

In 1990, The International Ecotourism Society (TIES), the world's first ecotourism organization, coined what has become the most popular definition of ecotourism: "Responsible travel to natural areas that conserves the environment and improves the wellbeing of local people." (Honey 2008, p. 6) Development projects of ecotourism have been established throughout the world, though not all of these have held true to the ecotourism definition. Some ecotourism destinations have created developments that resemble a commercial presence, rather than a development that considers the biophysical and cultural traits present on site. The term that is often coined for developments not true to ecotourism is "greenwashing." Establishments claiming to achieve ecotourism are either misinformed about how true ecotourism is structured or are essentially using the term "ecotourism" as a marketing scheme. Attention has been brought to developments that are greenwashing and "we are learning that the benefits of ecotourism can only be sustained through well-planned and carefully implemented projects that place the long-term wellbeing of the natural resources and local communities as a top priority." (Mehta 2002, p. 5)

T.I.E.S recognized developments that greenwash and have looked to create a whole new type of lodge, called an "ecolodge". (Mehta 2002, p. 6) Ecolodges are an entity within ecotourism which are accommodation facilities that conduct a thorough analysis of factors on site to

create a development that fits into the existing context, rather than imposing on it. Ecolodge's principles include water conservation, preservation of flora and fauna, design to create a small footprint, and interpretive programs to educate both employees and tourists about the surrounding natural and cultural environments, just to name a few. (Mehta 2002, p. 5) Ecolodge developments that strive to follow these principles are prime examples that illustrate how an ecolodge should be designed and operated. As ecolodges continue to be developed, designers must recognize how to design developments to fit within the cultural and biophysical characteristics on site. Creating an ecolodge, often in a sensitive environment, that does not incorporate awareness of the primary concerns which should be considered during the design process, will result in the degradation of the associated environment and perhaps the indigenous populations.

How can a manual be drafted to ensure proper planning and analysis of an ecolodge development is conducted throughout the design process?

Thesis

A tropical ecolodge design manual has been established, with a specific structure aimed to achieve a common goal, in order to create to a uniform design process that will achieve ecolodge principles. A set of succinct design principles, guidelines and criteria are intended to communicate design standards for architects, developers, owners and planners. This manual will aid in the achievement of ecological preservation, social and environmental user experiences and benefits (social and monetary) for the local indigenous economies and people. Furthermore, the design principles, guidelines and criteria will not only achieve a more holistic design and experience for ecolodges, but will create standards to achieve true ecotourism.

Intent of Manual

The roots, from which this tropical ecolodge design manual was established, began with a personal connection to the design principles and methods of ecolodge developments. Over the past year, I became interested in the notion that traditional hotels or accommodation facilities have the ability to take new form, one that creates harmony between its development and the natural and cultural worlds. With sustainability and conservation methods increasing in popularity, I felt hotels did not strive to create harmony within the natural realms they were situated in. Ecolodges bridge the gap between accommodation facilities and sustainable measures to create a more holistic design to improve the quality of life for all those a part of it. This master's project is intended to expand the breadth of research on ecotourism, more specifically ecolodge design, in order to present an informed design process for ecolodge developments.

The design manual is structured in a manner that allows a reader to apply ecolodge design principles in a development. The principles within the manual specifically identify considerations and establish a mindset by which a reader can apply to ecolodge design. Further analysis of the design guidelines and criteria will enable a reader to recognize considerations across tropical ecolodge developments.

Project Goals

1. Research the topic of ecotourism and ecolodge design, more specifically the guidelines and analysis factors that need to be considered when designing an ecolodge
2. Create a manual that can serve as a tool for designers and developers across the world
3. Communicate a succinct process to designing an ecolodge through a list of design principles, guidelines and criteria
4. Use written descriptions for the design principles, guidelines and criteria while communicating graphically their applications in previously built ecolodges
5. Create an interactive digital book, which designers can easily follow and utilize in a manner they feel most appropriate

Manual Structure and Flow

Fig. 1-1 depicts the tropical ecolodge design manual's overall flow structure. The diagram is intended to communicate how each chapter will linearly flow. It is imperative that a reader follows the manual through each chapter which includes tropical research, fitness design, implementation of fitness design and evaluation of fitness design prior to designing an ecolodge. Three additional appendixes are found within the manual and include the ecotourism primer, fitness design methodology and glossary.

The ecotourism primer, located in appendix A, is meant to inform the unformed reader about various topics present within ecotourism. The selected information is intended to inform the reader why ecotourism is imperative to consider when designing an ecolodge development. After completing the ecotourism primer, a reader can progress through the manual with a better understanding of the content. Furthermore, after the completion of reading the ecotourism primer, a reader will understand the need for an ecolodge design manual.

The fitness methodology, located within appendix B, allows a reader to understand how the fitness design products (design principles, guidelines and criteria) were generated. The appendix identifies ecolodge precedents that were used to study how each principle,

within fitness design, could be further developed and informed.

The tropical research section is intended to inform the reader on various topics involved with tropical ecosystems. Topical research is presented to communicate specific considerations when designing in tropical locales. It is important to present this information with the manual, since many factors affect tropical ecolodge designs. An ecolodge development that is situated within a tropical locale should consider what is presented within the tropical research to arrive at, and ensure, an informed design.

Within the fitness design section, readers have the ability to navigate through a list of design principles, guidelines and criteria to inform design of ecolodge developments. The implementation chapter allows readers to see how selected criteria have been applied in existing tropical ecolodges. This chapter includes various graphic portrayals to assist readers when thinking about how specific program elements within their ecolodge development can be applied. The evaluation chapter is intended to be used once an ecolodge development has been designed. Evaluation addresses each fitness design principle in terms of what considerations and questions must be posed about the development.

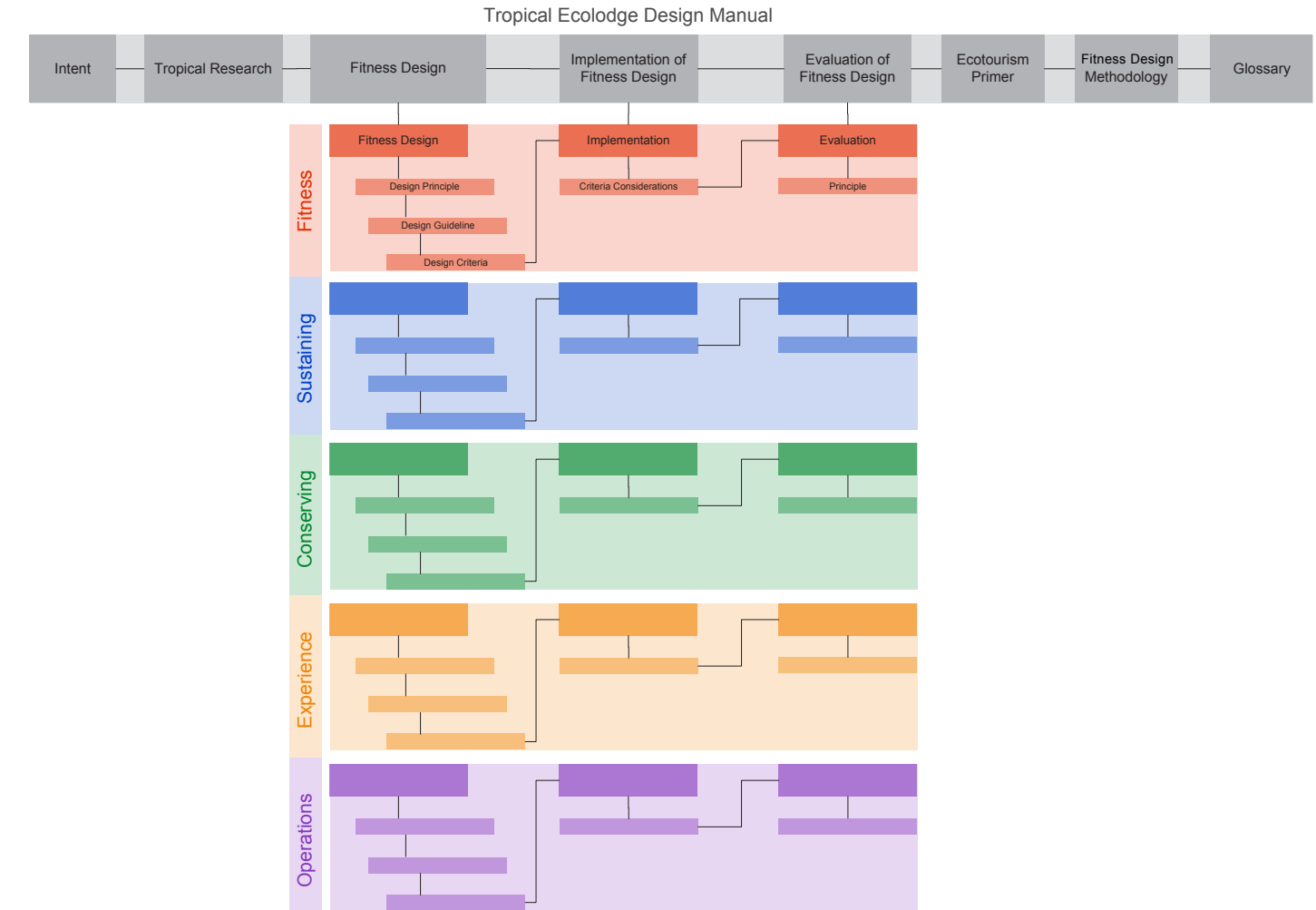


Fig. 1-1. Process diagram - ecolodge manual . Generated by Andrew Glenski



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Intent

The intent of the tropical research section, as seen in Fig. 2-1, is to inform the reader of tropical ecosystem characteristics that could potentially affect an ecolodge design. The tropical research section addresses the following topics: an ecosystem overview and summary, soils, climatic factors and natural vegetation present throughout tropical locales. The intent of the research is to broadly cover each topic addressing important considerations and processes occurring throughout tropical locales. As a designer, one must realize that all the information presented may not affect the selected site. It is important to gain knowledge of common themes present throughout tropical locales, so the proposed ecolodge is developed using more informed decisions. The research presents a broad look at each topic to orient designers to tropical ecosystem characteristics, though it is the responsibility of the designer to conduct analysis of the existing biophysical factors on site.

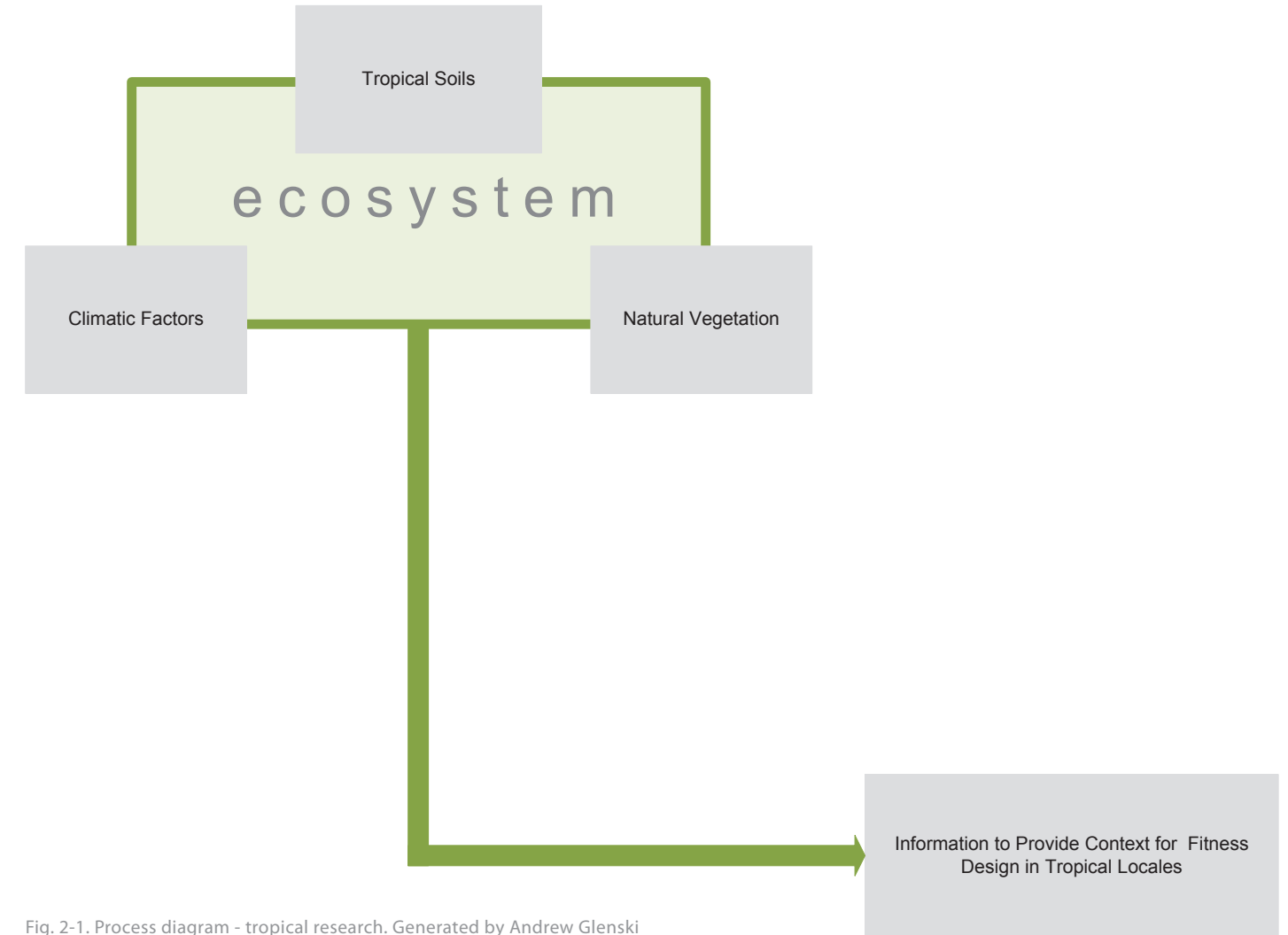


Fig. 2-1. Process diagram - tropical research. Generated by Andrew Glenski

Ecosystem Overview

“A natural ecological system or ecosystem may be defined as a collection of living organisms that interact or have the potential to interact with one another and with the physical environment in which they live. The non-living, or abiotic, component of all ecosystems consists of soil, water, and air. Topography, soil properties and climate characteristics determine the spatial and temporal variations in climate and the supply of mineral nutrients.” (Juo and Franzluebbers, 2003 p. 240) Within any ecolodge development, it is vital to ensure the development recognizes the natural characteristics of the ecosystem it seeks to occupy.

When designing an ecolodge, a designer should recognize the biota that is comprised within the development. Biota is defined as “the plant and animal assemblage of a biologic community.” (Clark 1977, p. 914) In tropical locales, the plant and animal life is often unique to its particular setting due to the high amounts of precipitation and increased temperatures. The number of different animal species is extensive and will not be covered in the following sections. A designer must understand how the animals currently live within the ecosystem to ensure the ecolodge does not cause disruptions.

Understanding the characteristics of the soil present is vital when planning for an ecolodge development. The recognition of soils present, along with their

qualities, must be known to ensure all program elements are suitable. In the terms of ecolodge design, specifically construction considerations, the underlying soils where construction is to occur should be properly analyzed to determine if the soils are suitable or unsuitable. The major reasoning behind taking precautions is to assure the ecolodge components can sustain themselves.

Measures should be conducted to study the present climates and vegetation. The vegetation on site is formed by the climate characteristics present. To ensure that plant life can thrive in an ecolodge context, a designer must ensure existing processes occurring are sustained. The following sections within the tropical research chapter look to give general characteristics of tropical soils, climates and natural vegetation. It is important that an ecolodge does not interrupt existing processes, but instead ensures that the ecosystems are allowed to sustain themselves.

Tropical Soils

Soil Overview and Classification

“Soil is the product of two processes: the decomposition of rock and the decay of plant and animal life. The processes of physical and chemical weathering are responsible for breaking down the bedrock into fragments. These rock fragments provide the original material from which residual soils are formed.” (Senior 1979, p. 32) The properties of soil are reliant on five factors that form soil. Those factors include parent material, climate, living organisms, topography and time.

Parent material is weathering rock that breaks down into fine pieces which results in soil formation. Climate affects the forming of soil by precipitation and temperature. Climate controls the supply of water for physical weathering and determines breakup. (Harpstead 1988, p. 18) Living organisms play a role because of their waste matter that is deposited to the topsoil. Topography affects soils in two main ways. One is that erosion carries topsoil from higher positions and deposits it in to the valley. The other reason topography plays a role is because water drains from uplands. The final factor in soil formation is time. Time refers to how long the other factors have been influencing soil formation. (Harpstead 1988, p. 20)

The soils found within tropical locations, are generally less researched than those located in temperate locales. “Many attempts have been made to

classify the world’s soils into major soil groups.” (Senior 1979, p. 33) Fig. 2-2 depicts tropical soil types and their associated locations. The figure includes the following soil types: desert soils, chestnut-brown soils, tropical black soils, red and yellow tropical soils.

Desert soils are typically located in arid environments. These climates produce little precipitation for the soils which, in turn, decreases the soil forming process. “Because of the sparsity of plant cover, desert soils lack any significant organic content.” (Senior 1979, p. 34) Without the presence of abundant vegetation, agriculture is difficult within regions of desert soils. “Application of water and fertilizers are necessary before these soils are suitable for crop cultivation.” (Senior 1979, p. 34) “Chestnut-brown soils are a type of zonal alkaline soils that form in areas of dry grassland receiving about 340-360 mm of precipitation annually.” (<http://botanydictionary.org/chestnut-brown-soil.html>) The dry grassland climates typically have more water, enabling grass to occur in some areas. This soil has the ability to produce humus (degraded organic material) which gives the soils its brownish hue. “When irrigated, these soils are more agriculturally productive than are the desert soils.” (Senior 1979, p. 34)

Tropical black soils, also known as tropical black earths, are typically dark grey or black in color and are amongst the richest soils found in tropical locales.

Typically, environments that contain black soils contain both a wet and dry season. “During the wet season, tropical black soils become sticky and are difficult to work. During the dry season, they become extremely hard and crack.” (Senior 1979, p. 34)

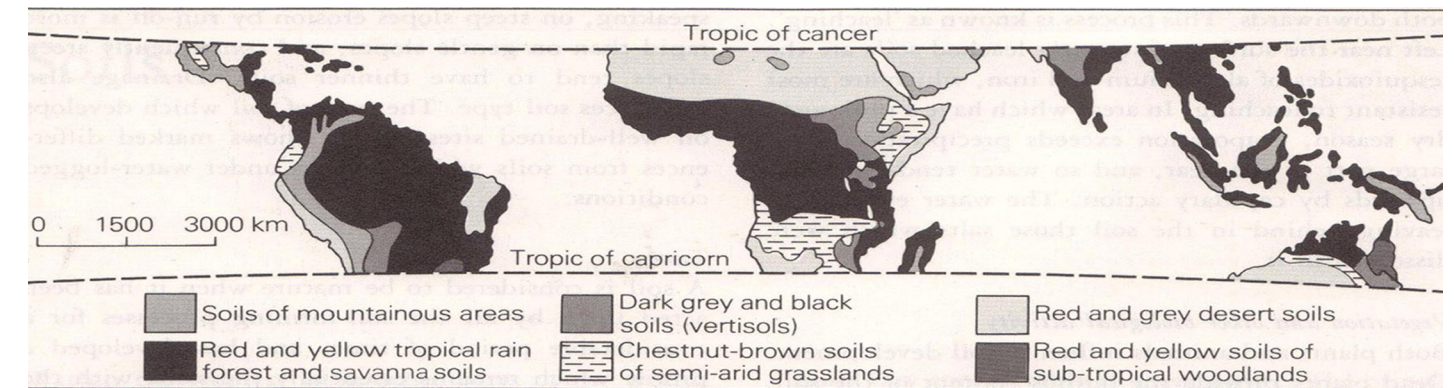


Fig. 2-2. The tropical lands - distribution of soils (greatly simplified). Senior 1979, p. 34

Soil Characteristics

“Many tropical rainforest soils are very poor and infertile. Millions of years of weathering have washed most of the nutrients out of the soil. Despite the amount of vegetation in the rainforest, the soil contains less organic matter than that of temperate forests, because the warm humid conditions encourage faster decay and recycling of nutrients back into living forests.” (<http://www.mobot.org/hort/gardens/CLtropfor.shtml>)

Soil erosion is the removal of soil by the action of wind or water. Erosion that is caused by wind is often a concern in arid areas and those which experience a marked dry season. “In many parts of the tropical world, the rainfall tends to be torrential in nature, and erosion by running water is widespread. Erosion by wind, on the other hand, is generally less common. Where the plant cover has been removed, and the dry soil is exposed to strong winds, the lighter particles of the soil may be picked up and carried away.” (Senior 1979, p.35)

The causes of soil erosion typically relate to man’s relation to the land, often damaging the existing soil structure and process. “One of the most common causes of soil erosion is the cultivation of steeply sloping land, without the use of adequate measures to check the rapid runoff of surface water.” (Senior 1979, p. 35) Throughout the world, communities are forced to find land from which they can sustain their daily lives. Throughout tropical communities, a wide range of

agricultural practices occur, oftentimes exposing and jeopardizing soil structure. “In some of the grassland areas of the tropical world, ‘overstocking’ is an important cause of erosion.” (Senior 1979, p. 36) Overgrazing causes a major disturbance to the underlying soil, because the grass and vegetation is stripped, thus exposing soils to erosion factors.

When soils become eroded, there are many effects on the ecosystem and the people involved in the landscape. “The most obvious of these effects is the reduction of crop yields in the eroded areas. The surrounding areas, although not themselves eroded, also may suffer a reduction in productivity, as a result of eroded material being deposited over them.” (Senior 1979, p. 36) Soil erosion can affect the water supplies found throughout communities, as well. When the soil has been stripped or exposed, from some form of human caused erosion, the rainwater will rapidly flow down the path of least resistance. “As a result, the rivers which originate in badly eroded areas tend to flood immediately following periods of heavy rain, but during periods of dry weather, their flow is abnormally reduced.” (Senior 1979, p. 37)

“Soil conservation is basically a matter of using the land as it should be used.” (Senior 1979, p. 37) If proper conservation precautions are taken, the soil should not be in a state of erosion. Some of the themes

present for conservation methods in tropical locales are afforestation and terracing. “Afforestation is the act or process of establishing a forest, especially on land not previously forested.” (<http://www.merriam-webster.com/dictionary/afforestation>) Limiting the amount of cultivation on steep slopes will help sustain the ecosystem, thus conserving the minimal amount of erosion. Reforestation creates an opportunity by planting natural vegetation that will help regulate the water retention process. “Forest provides the most complete protection against soil erosion of any type of vegetation. It is particularly important that eroded water catchment areas should be reforested.” (Senior 1979, p. 38) Terracing is a method that should be employed for communities that need to cultivate lands on steep slopes. “Terracing checks the flow of water down the slope, and has been used as an anti-erosion measure in several parts of the tropical world for hundreds of years.” (Senior 1979, p 38) Taking specific precautions and implementing conservation practices should help sustain the natural soil process and eliminate major spots of erosion.

Climatic Factors

Climate Overview and Classification

“The term “tropics” refers to the continuously warm and frost-free zone of the world that lies approximately between the Tropic of Cancer and the Tropic of Capricorn. Geographically, the tropics encompass the entire region of Southeast Asia, Central America, the islands in the South Pacific and the Caribbean Basin, a major part of Africa, South America, a large portion of the Indian subcontinent, and a small part of northern Australia.” (Juo and Franzluebbbers, 2003 pg. 3) “Mean annual temperatures at sea level are usually well above 20° C, although somewhat lower temperatures are experienced in those coastal areas which are influenced by cool ocean currents.” (Senior 1979, p. 1) The cause of higher temperatures in the tropical world is dependant on five factors: latitude, altitude, distance from the sea, ocean currents and the amount of cloud cover. “Of these factors, altitude is by far the most important, temperature decreasing upwards at a rate of about 1° C per 150 meters.” (Senior 1979, p. 2)

The climatic regimes present solely in tropical locales are difficult to determine. This is due to climatic changes and one type of climate condition merging into another (Senior 1979, p. 5). Five main climatic types are present within fig. 2-3, which include:

1. Equatorial
2. Tropical Marine
3. Tropical Continental
4. Tropical Monsoon
5. Hot Desert

Climate Characteristics

“The equatorial type of climate occurs as a belt extending around the world, within about 5° - 10° of the equator.” (Senior 1979, p. 5) This defined belt does become interrupted in areas which include high mountainous areas, such as the Andes of South America. The following characteristics are commonly present among equatorial climates:

1. Temperatures are constantly high throughout the entire year, with little variation. “The mean monthly temperatures at sea level are typically around 27° C.” (Senior 1979, p. 5)
2. The humidity within the climate remains high through the whole year.

3. Major cloud groups are commonly present
4. Winds remain relatively light throughout the year.
5. The rainfall is abundant throughout the year and is well distributed.

“The tropical marine types of climate occur on islands and on the east coasts of land masses, roughly between latitude 10° and the tropics.” (Senior 1979, p. 6) The following characteristics are present among tropical marine climates throughout the year:

1. The temperatures remain high constantly throughout the year.
2. Rainfall is typically moderate or

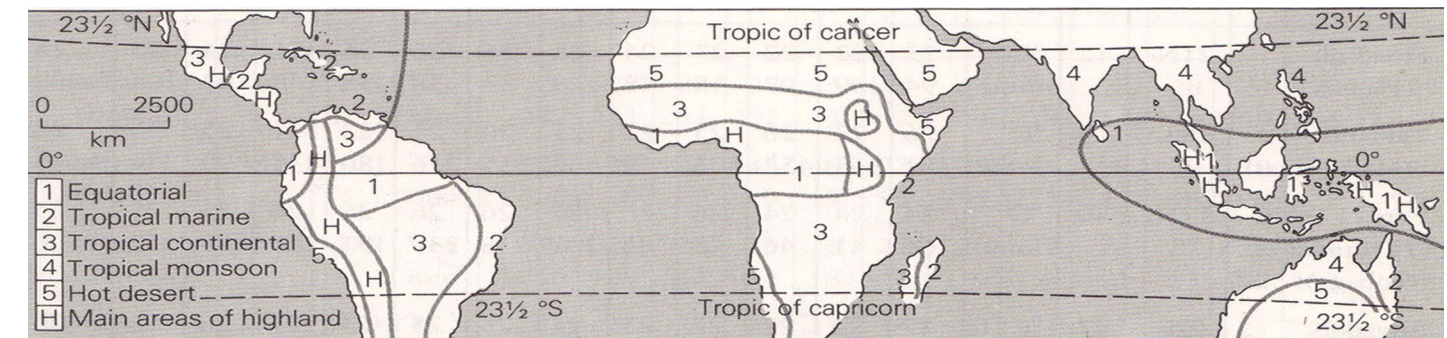


Fig. 2-3. The tropical lands - broad climatic divisions. Senior 1979, p. 5

- heavy each year. Differences are present when a change in relief occurs, bringing considerable variations in rainfall amount.
3. "Violent tropical storms occur from time to time. These are known as hurricanes in the West Indies, and as typhoons in tropical Asia." (Senior 1979, p. 7)
 4. With the presence of trade winds and lower relative humidity, the temperatures compared to equatorial climates are much more refreshing

Tropical continental climate types are present in areas situated between equatorial and hot desert climate types (Senior 1979, p. 7). The difference in both of these seasons (tropical marine and tropical continental) brings two different effects to the climate. For part of the year, areas are exposed to dry trade winds, while the remainder of the year areas is invaded by a belt of convectional rains (Senior 1979, p. 7). This results in both the presence of dry and wet seasons. The following characteristics are present among tropical continental climates:

1. Temperatures remain high throughout the year, though in relation to equatorial climates the

annual and diurnal temperatures swings tend to be greater

2. "The rainfall is highly seasonal in its distribution. The bulk of the rain falls during the 'summer' months, and the rest of the year is very dry. With increasing distance from the equator, the rainfall decreases in amount, and the dry season becomes longer and more severe." (Senior 1979, p. 7)
3. The humidity and cloud cover present within tropical continental climates are determinant of the season. During rain seasons humidity and cloud cover are generally high, while during dry seasons each component remains much lower.

Tropical Monsoons are widely present amongst tropical Asia and Australia due to seasonal winds. The winds take two different directions, which are solely dependent on heating and cooling of land and water present within each season. "During the 'summer,' the land masses heat up more rapidly than the surrounding areas. Consequently low pressures develop over the land, into which are drawn moisture-bearing winds from the sea. During 'winter,' however, the land cools down more rapidly than the sea, resulting in the development of high pressure over land, from which the winds

blow outwards." (Senior 1979, p. 7) The heavy amount of rainfall distributed throughout the year is also dependant on the wind patterns during the seasons. Other factors that affect the amount of rainfall are the relief and the distance from the sea. "Temperatures at sea level are high throughout the year, with a small or moderate annual range." (Senior 1979, p. 8)

"The outstanding feature of the hot desert type of climate is its aridity, but a distinction can be made on the basis of temperature, between coastal deserts and those located in the interior." (Senior 1979, p. 8) One major characteristic present within hot desert climates is the presence of deserts on the western coasts of continents. When hot deserts reach the western coasts, the climate is modified due to equator-ward flowing cool ocean currents. (Senior 1979, p. 8) Along these coasts, temperatures reach an average of 20° C. "The presence of cool ocean currents also serves to increase the aridity of the coastal deserts. On passing over the sea, the air is cooled, and its capacity to absorb moisture, therefore, reduced. When the wind blows on-shore, however, the air is warmed by contact with the land, and its moisture-holding capacity is increased. In coastal desert areas, the rainfall is extremely low, usually averaging less than 125 mm, and sometimes less than 25 mm per year (Senior 1979, p. 8). In the continental interiors cloud cover is generally sparse increasing the temperatures and making them much more extreme.

"Maximum daily temperatures in summer are usually well over 40° C, and often over 50° C. At night, however, temperatures fall rapidly, and diurnal ranges of 15° C - 30°C are common." (Senior 1979, p. 9)

Natural Vegetation

Vegetation Overview and Classification

The type of plant life which develops and is suited naturally to a particular physical environment is commonly known as the natural vegetation (Senior 1979, p. 21). The vegetation present within a specific ecosystem is based on four overarching factors:

1. Climatic factors (particularly temperature, humidity, precipitation, light intensity and wind)
2. Edaphic factors (those related to soil)
3. Geomorphic factors (those related to land forms)
4. Biotic factors (those related to living organisms) (Senior 1979, p. 21)

Each of these factors plays an important role in determining what type of natural vegetation has the ability to survive. The various vegetation types present within tropical locales are created due to the impact of each ecological factor. For instance, in tropical lowlands temperatures are continuously favorable to plant growth, and so in areas with heavy and well distributed rainfall the natural vegetation will most likely be dense forests. (Senior 1979, p. 21) "Within the tropics, as in other parts of the world, man has modified the original vegetation cover to such an extent that little, if any, true natural vegetation now remains." (Senior 1979, p. 21) Large expanses of natural vegetation patterns are virtually nonexistent because of the presence of man

and their integration of buildings, roads and cultivated vegetation. (Senior 1979, p. 21) "In other areas, wild plant life still exists, in the sense that it has not been planted or tended by man. In many cases, however, such vegetation can only be described as semi-natural, for man has influenced it to some extent, either directly by cutting or burning, or indirectly through the grazing habits of his animals." (Senior 1979, p. 21) Fig. 2-4 through Fig. 2-7 represents general vegetation patterns within tropical locales (if man had not intervened). These patterns include:

1. Tropical rain forest
2. Tropical swamp forest
3. Tropical seasonal forest
4. Savanna
5. Thorn woodland
6. Semi-desert scrub and desert
7. Montane vegetation

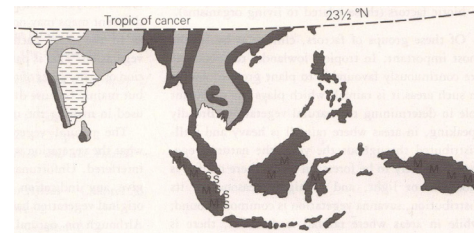


Fig. 2-4. The tropical lands - natural vegetation in Asia. Senior 1979, p. 22

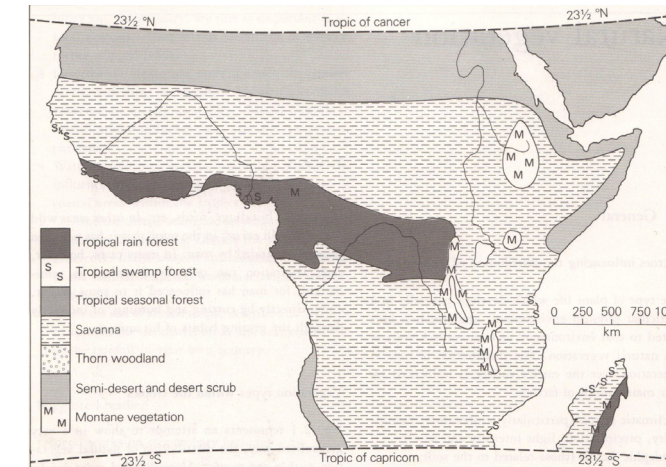


Fig. 2-5. The tropical lands - natural vegetation in Africa. Senior 1979, p. 22

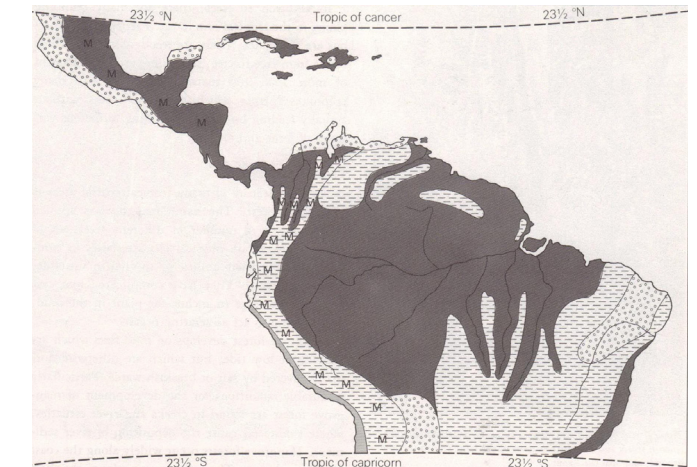


Fig. 2-6. The tropical lands - natural vegetation in Latin America. Senior 1979, p. 23

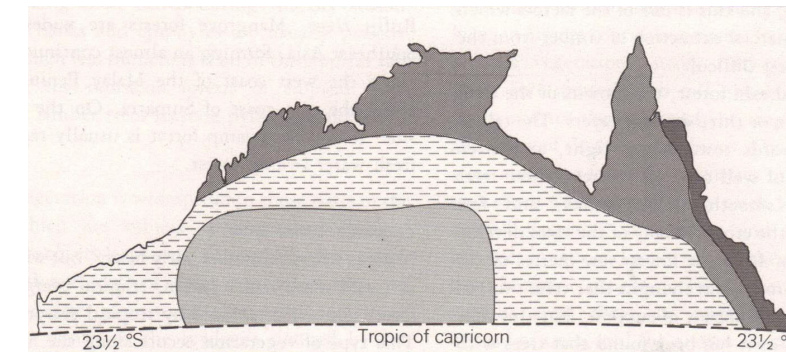


Fig. 2-7. The tropical lands - natural vegetation in Australia. Senior 1979, p. 23

Vegetation Characteristics

“Tropical rain forest (sometimes known as equatorial forest or selva) occurs in tropical lowlands which have an abundant and well-distributed rainfall.” (Senior 1979, p. 22) There are three distinct formations of tropical rain forests, which are known as the American, the African and the Indo-Malaysian formations (Senior 1979, p. 21). Each of these formations produces a variety of plant life due to the high temperatures and large amount of precipitation. Amongst the variety of vegetation that is present within tropical rain forests, evergreens and climbing plants are most common. (Senior 1979, p. 24) Tropical swamp forests are most commonly found amongst coastal areas where mangrove forests thrive. The name mangrove is applied collectively to a number of different trees, which have the ability to survive in creeks and river estuaries due to their complicated root systems, which serve to anchor the plant in the mud. (Senior 1979, p. 24) Mangrove forests develop on mud flats which are exposed at low tide, widely found on the East African coast. (Senior 1979, p. 24)

“In areas where rainfall is fairly heavy, but where there is a well marked dry season, tropical evergreen rain forest is usually replaced by tropical seasonal forest.” (Senior 1979, p. 24) The vegetation present within tropical seasonal forests is similar to tropical rain forest, though the vegetation is not as dense and does not have the same aesthetic qualities. For

example, many of the trees found are deciduous due to the dry season that occurs annually. (Senior 1979, p. 25) “Savanna vegetation is widespread in those parts of the tropics which are subject to a marked seasonal drought.” (Senior 1979, p. 25) Tropical Africa is exposed to such savanna vegetation on the exterior ends of tropical rain forests. “The term savanna has been used to refer to a wide range of plant communities, from unbroken treeless grasslands, to woodlands in which trees and shrubs form an almost continuous cover.” (Senior 1979, p. 25) Savanna vegetation can be non-uniform, in relation to vegetation types, in wetter areas. “As the rainfall decreases in amount, and the dry season becomes longer and more severe, the savanna vegetation becomes progressively poorer. In the driest savanna areas, there are scattered thorny bushes instead of trees, and the grasses are short and do not form a continuous cover.” (Senior 1979, p.25) The aesthetic of vegetation types, in terms of color, is also dependant on the occurring season. Savanna vegetation is often not natural, due to man’s presence and practices in savanna areas. For example, repeated burning tends to increase the growth of perennial grasses, while woody plants are severely damaged. (Senior 1979, p. 26) On the other hand, it has been discovered “that the existence of savanna vegetation is due to the local soil conditions, rather than to the effects of burning.” (Senior 1979, p. 26)

“In some parts of the tropics where there is a very prolonged and severe dry season, thorn woodland occurs, mostly dominated by thorny bushes, in impenetrable jungle.” (Senior 1979, p. 26) Among the vegetation types present within thorn woodlands, cacti are usually present. The plants found within this vegetation type are mainly xerophytic, which refers to plants that can adapt to withstand drought. (Senior 1979, p. 27) “During the long dry season the landscape appears almost lifeless, but when the rains begin, the vegetation bursts into intensive life.” (Senior 1979, p. 27) Semi-desert scrub and desert vegetation types are found amongst dry areas of thorn woodlands. “In this vegetation type, the plants are more widely spaced and numerous than those in thorn woodlands.” (Senior 197, p. 27) The presence of various vegetation, in semi-desert scrub and desert areas, is mainly dependant on the amount of precipitation. “Desert plants are adapted in various ways to withstand extremely dry conditions. In these very dry environments, most plant life exists in a virtually dormant condition for much of the time, but after the occasional heavy shower rain, it bursts into growth.” (Senior 1979, p. 27)

“Although the distribution of natural vegetation in tropical lowlands is influenced mainly by rainfall, in tropical highland areas, the reduction of temperature with altitude has marked effect upon plant life.” (Senior 1979, p. 27) With the presence of mountain conditions,

the vegetation found is based on the altitude where the vegetation grows. Tropical rain forest is replaced upwards by mountain forests, which in turn provides the structure for alpine vegetation to grow (Senior 1979, p. 28). “Finally, if the mountain is sufficiently high, the zone of perennial snow is reached.” (Senior 1979, p. 28)

Summary

The following topics, discussed within the tropical research section affords a reader to gain pertinent information when designing an ecolodge development in a tropical locale. For a designer, it is important to recognize the ecosystems that comprise the ecolodge site. Understanding the underlying systems within ecosystems is vital to ensure development will not interrupt existing processes. In tropical locales, the soils, climate and vegetation often shape the underlying structure of each ecosystem. The research within this chapter generally covers the aspects within each ecosystem. A more detailed analysis of specific considerations of the site's soils, climatic factors and natural vegetation must be studied to arrive at a more informed knowledge of the site.



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Intent

A “fit” design is intended to achieve sustainability and quality of life for the environment and the communities that have daily interaction with the development. A proposed development of any kind will become a part of the existing ecological and cultural realms. In the case of ecolodge developments, it is vital to ensure the indigenous communities not only approve of it, but also are regarded as entities that should not be compromised. A responsibility for all ecolodges is to create a destination for people to experience while allowing the traditional customs and practices of the indigenous populations to continue. The same considerations are present when thinking about the ecological practices occurring on and off site. An ecolodge should strive not only to sustain and conserve the existing ecological processes, but enhance them, if possible. Sustaining and conserving the environment can be achieved by allowing ecosystems to naturally grow and prosper. In many cases, developments compromise ecosystems, thus forcing them to adapt, which sometimes degrades the quality of the existing environment.

Fitness design can be implemented through all ecolodge developments in both the ecological and cultural worlds. A fit design can be achieved if the following principles are involved in the design process: fitness, sustaining, conserving, experience and operations. As seen in fig. 3-1, each principle has

accompanying guidelines and design criteria which further outline what must be studied and considered. It should be remembered that all the guidelines and criteria may not be used (or even relevant to the specific development). In addition, the design principles, guidelines and criteria are geared for a tropical context. Still the general characteristics and considerations for each fitness design component can be applied to ecolodge developments in temperate locales.

The fitness design chapter has two goals: communicating the philosophy and importance of fitness design along with presenting an informed set of design principles, guidelines and criteria to communicate their interconnectedness. The philosophy and importance of fitness design will be communicated through the breakdown of design principles, guidelines and criteria. In order to present an informed fitness design, the utilization of precedents and research is critical.

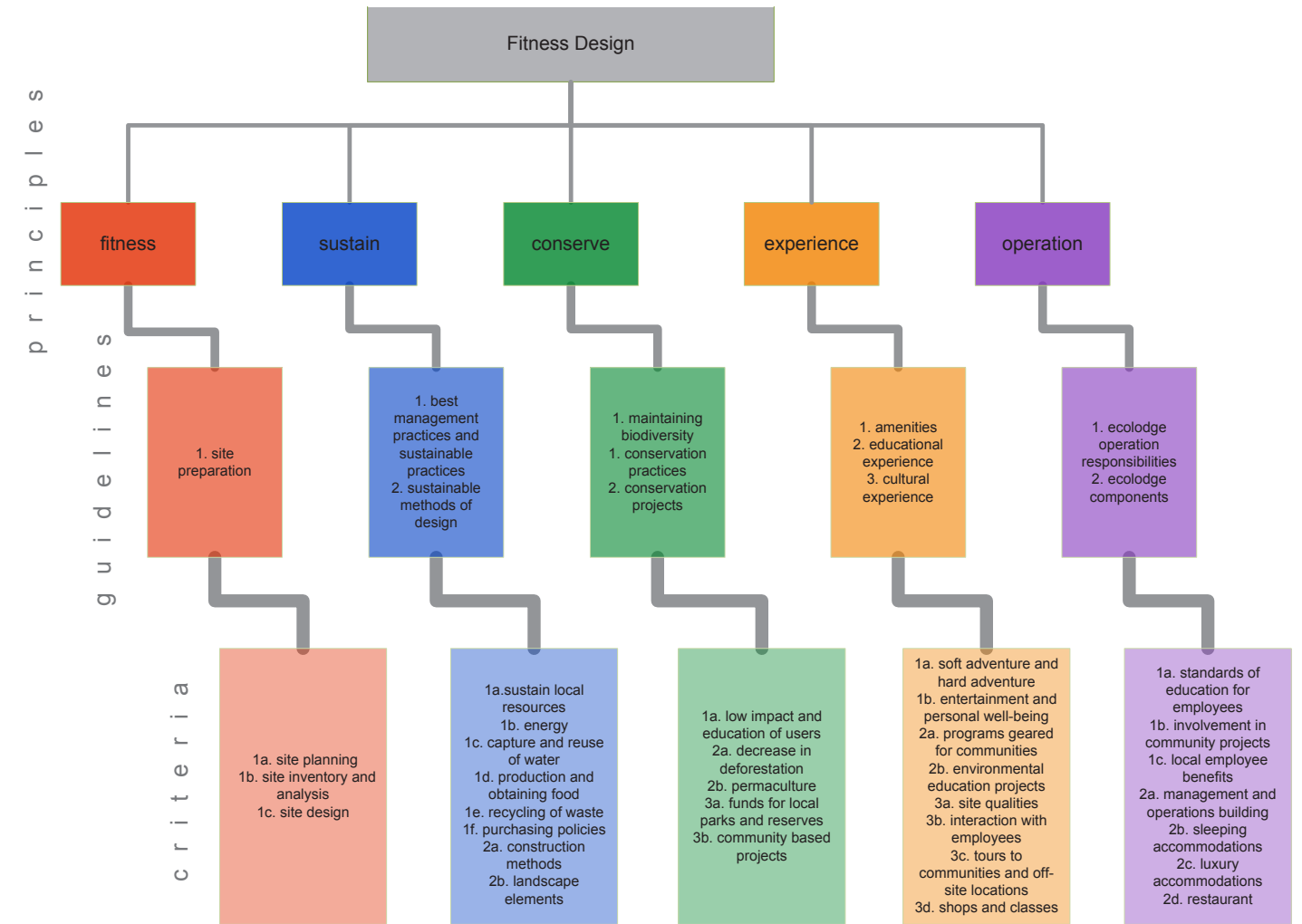


Fig. 3-1. Process diagram - fitness design. Generated by Andrew Glenski

Structure of Fitness Design

The following definitions of each component within fitness design are generated to establish a linear, hierarchal structure for the manual. The methodology behind each component allows for a linear relationship, beginning with principles and moving down hierarchically, finishing with design criteria. The following definitions of each component are presented to outline how each will be used. These definitions are to be referred to for the remainder of the document when describing the intended use of each design principle, guideline or criterion.

Design Principle

The principles communicate a general reference or idea that is used to frame how fitness design is achieved. In addition, a principle is used to create a basis from which all guidelines and design criteria stem. Hierarchically, the principles are first, followed by guidelines then criteria. For example, the principle fitness is used to frame what an ecolodge should consider in order to create an ecolodge that “fits” into the existing site. A reader will then be able to read further about the fitness principle by following the fitness design guidelines and criteria.

Design Guideline

The guidelines break down each principle in terms of what needs to be considered for fitness design to be accomplished. In addition, the guidelines are used

to establish a general reference from which the design criteria stem. The guidelines typically include broad descriptions of factors that specifically address each principle to achieve fitness design. For example, once readers have read through the fitness principle, they will be exposed to further considerations that are intended to achieve fitness design.

Design Criterion

The design criteria are created to inform each principle and guideline, through specific design considerations to implement in ecolodge design. The criteria explicitly outline what is included under each guideline and principle. For a designer, the criteria will spell out exactly what should be considered to achieve fitness design. In the case of the fitness principle, the criteria is intended to directly achieve fitness if the methods presented are implemented.

Throughout this process, a designer is able to consider a principle, learn about considerations of that principle through guidelines and, finally, the criteria allow the designer to discover how to implement this in the ecolodge design.

Navigation Graphic

A navigation graphic has been created to help orient a reader throughout the manual. The graphic is instituted within the following chapters: fitness design, implementation of fitness design and evaluation of fitness design. These three chapters can be followed for each principle. For example, if a reader begins with the fitness principle, he can follow along to see how it has been applied in existing ecolodges (implementation of fitness design) and, finally, how to evaluate the principle (evaluation of fitness design).

Fig. 3-2 depicts each individual component within the navigation graphic. The graphic is structured hierarchically, beginning with each chapter and, then, associated sections within the chapter. A color is assigned to show not only where the reader is in the manual, but shows what principle is being discussed. The following colors have been assigned to each fitness design principle and are as follows:

- Fitness - Red
- Sustaining - Blue
- Conserving - Green
- Experience - Orange
- Operations - Purple

Fig. 3-3 shows to what each component within the graphic refers. The chapters are included along the top line of boxes, while under each chapter are the chapter's subsections

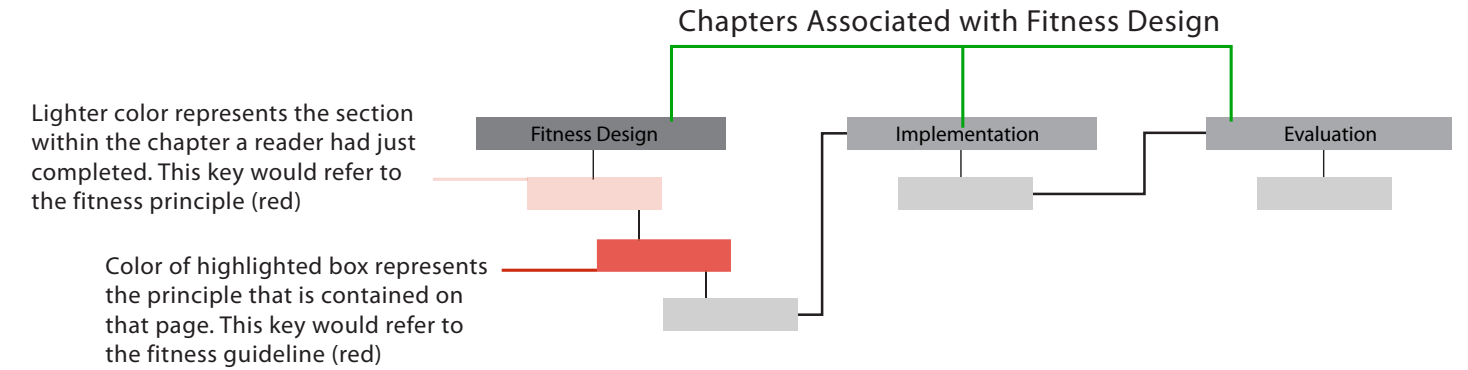


Fig. 3-2. Process of navigation graphic. Generated by Andrew Glenski

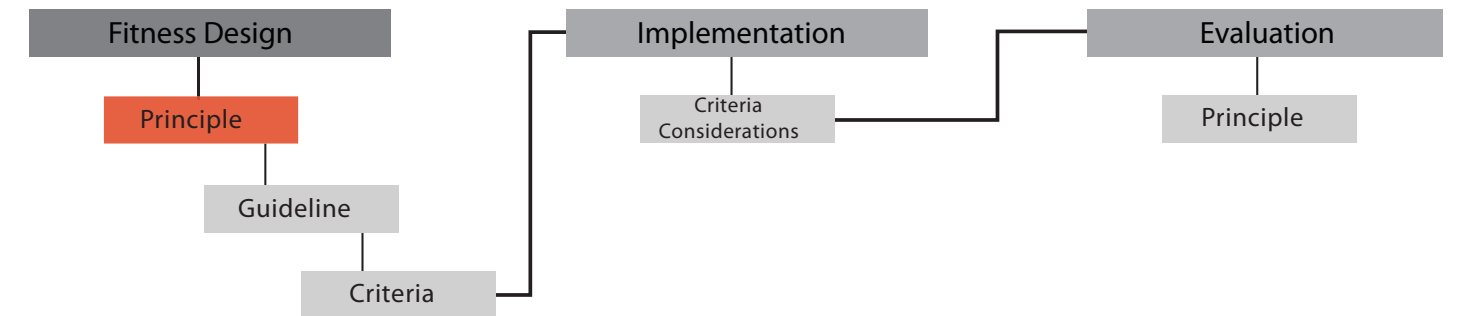
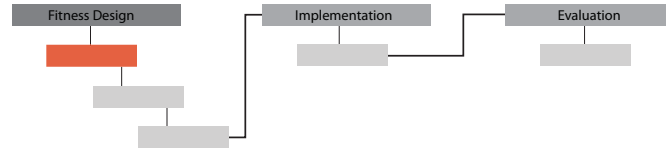


Fig. 3-3. Components of navigation graphic. Generated by Andrew Glenski

Fitness

e



communities to continue their practices while not compromising their daily lives.



Fig. 3-4. Aerial photo of Ranweli Holiday Village. www.ranweli.com

The environment should be viewed as a major priority in order to create minimal disturbance. It is imperative to understand that minimal to no disturbance to the environment ensures the quality of life for societies associated around and within the development. The following design guidelines and criteria will ensure a planning and design approach, in which the environment and existing communities have the ability to sustain their practices and processes. When determining the design of an ecolodge development, disturbance of the community, much like the environment, should be avoided at all costs. The development of the ecolodge should allow the existing

Site Preparation

Before any planning, inventory, analysis or site design, an understanding of ecotourism, more specifically the ecolodge principles, is critical. The methods, communicated through site preparation, ensure a development fits into the existing context of the site, which is portrayed in fig. 3-5. Overall, site preparation is used to frame a design for an ecolodge development that considers the following criteria: site planning, site inventory and site design. The existing site's context, both ecologically and culturally, should be studied and evaluated by the designer. This context information includes site history (along with local cultural history), indigenous populations present and their customs and recognition of included ecosystems on site (understanding of processes and relationships). The specific characteristics associated within the natural and human environment should be understood to ensure an informed design achieves fitness.

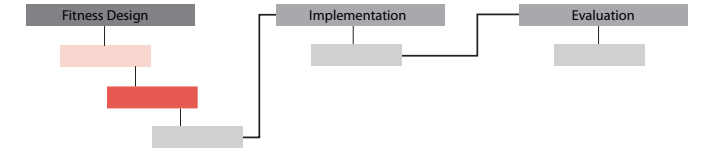


Fig. 3-5. Ranweli bungalows situated within the ecological context of the site. www.flickr.com

Site Planning

“Site planning is the art of arranging structures on the land and shaping the spaces between, an art linked to architecture, engineering, landscape architecture and city planning. Site planning is more than a practical art, however complex its technical apparatus. Its aim is moral and aesthetic: to make places which enhance everyday life, which liberate their inhabitants and give them a sense of the world they live in.” (Lynch 1985, p. 1) In terms of ecolodge design, site planning plays a crucial role in assuring measures are taken to allow the development to fit the existing context. “Careful, well-researched master site planning and ecologically and socially conscious site design are crucial to creating harmony between tourism developments and environmental/cultural protection.” (Mehta 2002, p. 9) In order to abide by ecotourism and the ecolodge principles, planning must be conducted to ensure characteristics on site are preserved and sustained throughout time.

An ecolodge development has the potential to either improve or degrade its existing context. In order to assure the site is sustained, various measures should be taken by the designer. More specifically, “site planning and design for an ecolodge must involve in an integral way land use, human circulation, existing structure (if any), facilities and utilities in the natural and human environment.” (Mehta 2002, p. 9) The following considerations must be involved not only on

a planning level, but should be carried throughout the entire design process. Determining the factors that must be considered should occur early in the project process to ensure these factors are reflected in the final design of the ecolodge.

“The success of an ecolodge can pivot on the initial processes of site evaluation and selection.” (Mehta 2002, p. 9) Since so many ecolodge developments are located in fragile or protected environments, proper site evaluation and selection must take place. This will help guide the designer to area(s) within a site that can support the list of program elements to be placed. It is important to realize that protected areas on site must not be developed, though if no other alternatives exist, the best alternative should be taken.” (Mehta 2002, p. 9) “The selected site should support the lodge within natural and biophysical resource limits while offering ecotourists the opportunity to experience and enjoy the natural environment (Fig. 3-6). All considerations involved in selecting the most appropriate site for an ecolodge will be essential to following decisions dealing with design and construction.” (Mehta 2002, p. 9)

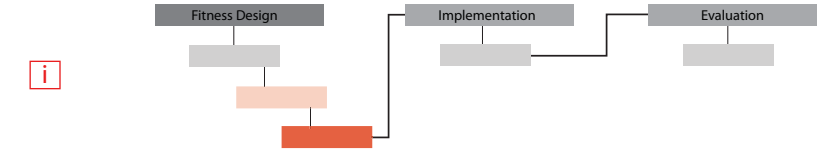


Fig. 3-6. Dry-stacked stone wall on path leading to Lapa Rios suites. Photo courtesy of Mark Dineen.

Site Inventory and Analysis

The site inventory and analysis stages of the design process are often considered the most important step of design. It is essential to carry the site planning criteria further by examining specific factors that may create opportunities or constraints for the site. "An ecolodge is not separable from the environment in which it is located and, for this reason, an analysis of the natural and cultural characteristics of the site should take place before the design and building stages." (Mehta 2002, p. 12) Inventory conducts research to inform the ecolodge program and outlines where opportunities and limitations occur. Identifying all associated elements that are necessary to inventory, based on the ecolodge program, will allow the site analysis to be informed and carried out to its full potential.

"Any inventory or analysis would be incomplete without at least a rudimentary understanding of how the local population relates to the land spiritually, culturally, and physically." (Mehta 2002, p. 12) It is important to note qualities of such conditions to ensure the design identifies opportunities and limitations at an early stage. If the design continues to be carried through, with these considerations, it will be informed and adhere to the fundamental fitness design principle of "fitness." A list of design considerations to inventory and analyze could include: a site boundary survey, hydrology and drainage patterns, existing water bodies, wildlife habitat, underlying geology, vegetation,

topography, soil types, climatic conditions, sensory qualities, views, existing structures, site history, local communities and cultures. (Lynch 1984, p. 420; Mehta 2002, p. 12)

Site analysis is primarily used to determine areas of suitability and vulnerability. Areas are mapped to communicate where program elements have low, medium or high suitability. The location and purpose of each program element will become evident once suitability analysis is conducted. This is accomplished by ensuring a program element can be implemented into an area which can support the needs of the program element, as seen in fig. 3-7. On the other hand, the vulnerability of specific locations on site will inform the designer of where program elements and development must be avoided. These include areas with unstable soils and slopes, large expanses of existing important vegetation and areas determined as sensitive ecosystems that must not be disturbed. During each stage it must remain evident that natural and cultural aspects are of utmost importance and are not to be disturbed or compromised.

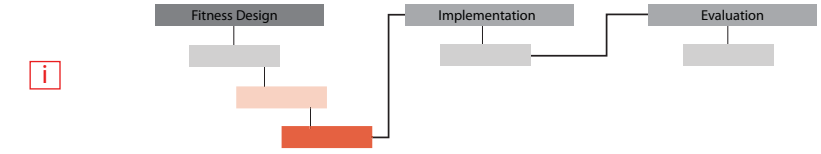


Fig. 3-7. Ranweli bungalows situated in an ecological setting. www.flickr.com

Site Design

“Site design, as compared to master site planning, is specific to the property on which the ecolodge is to be developed. It deals with issues that are within the ecolodge site. Ecolodge site design should enable the principles of adaptation, reduction, reuse, repair, recycling and energy conservation to be used.” (Mehta 2002, p.18) It is important to design for the following principles, but the overall site design is dependent upon the locale of the ecolodge, which is shown through fig. 3-8. For example two ecolodge developments could have completely different designs, because of local customs, environmental considerations, presence of large bodies of water (i.e. oceans for coastal settings) or overall design goals. Though, amongst all ecolodges, there are considerations concerning architectural styles, intended number of buildings and uses, amenities to include and number of guests allowed to stay at the ecolodge at one time.

“A fresh view of lodge architectural design is necessary if the hospitality industry is to be extended successfully into sensitive areas: ecolodge design is based on a blend of traditional technology and materials, along with modern concepts and appropriate technology. The considered inclusion of local people and the proper conservation of natural and cultural resources are crucial determining factors, particular as typical ecolodges are sited in or around protected areas, and in most cases, are neighbor to traditional areas.”

(Mehta 2002, p. 57) A study of appropriate architectural styles, construction methods and purposes should be conducted based on feasibility and cultural influences. The architectural component of design provides an educational and cultural experience for the guests of the ecolodge and should not be overlooked.

Other considerations, such as ecolodge components and amenities to be included, should receive, at least, a rudimentary analysis to ensure the proposed uses can be sustained on site. The number of buildings to include in a development is solely dependent on the amount of guests intended to stay at the ecolodge at one time. Ecolodges that are intending a large clientele base at one time will obviously need more rooms and multiple facilities to provide the basic necessities on a day-to-day basis. The amenities to be included within an ecolodge will be dependent on the amount of activities available for human interaction. Specific amenities that can be included will be later discussed in the experience principle. Site design, much like other criteria found within fitness, must ensure the program designed for the ecolodge is appropriate for the existing site.

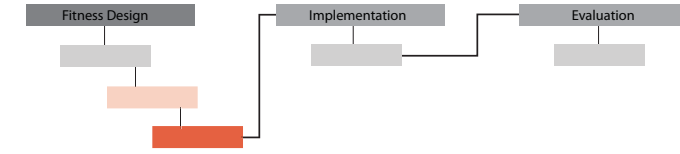


Fig. 3-8. Ecolodge components form and materials reflect the sites locale. Photo courtesy of EDSA

Sustain Local Resources

An integral part of best management practices is ensuring local resources are sustained. “Clean drinking water is becoming increasingly precious, particularly where potable water use is at, or beyond, natural carrying capacity.” (Mehta, 2002, p. 43) Ensuring resources, such as potable water, are sustained require proper precautions to be taken. For example, an ecolodge should “avoid the use of potable water for any uses other than human consumption. Grey water should be used for toilets, irrigation and other compatible uses.” (Mehta 2002, p. 43) Sustaining resources, such as water, benefits the local communities and sustains their supply of potable water. Fig. 3-10 demonstrates how grey water is captured and displayed on site. Natural resources, such as trees and fertile soils, should be viewed as limited. “Healthy soils are an important factor of any ecosystem and all attempts should be made to preserve existing soils before and during construction of an ecotourism facility, and to stop any human-made erosion.” (Mehta 2002 p. 42) Not only should the ecolodge take major steps in overseeing the management of these resources, but guests at the ecolodge should be aware of these systems and their effect on them.



Fig. 3-10. EDSA's design of water features implemented on site. Photo courtesy of EDSA

Energy

“Ecolodges may be powered in various ways. Ideally, you should maximize natural ventilation, heating and lighting.” (Mehta 2002, p. 73) Ecolodge developments play a vital role in utilizing techniques to use energy in its daily operations. Such techniques include solar, wind, natural gas, geo-thermal, generators, wood combustion, hybrid systems and low-energy lighting. (Mehta 2002, p. 72) The method of capturing energy sources differ from locale to locale. In coastal developments, the use of tidal and wave energy can be explored, whereas rainforest environments may be suitable for wind and solar energy. The guests visiting the ecolodge should be educated on energy and understand their role in energy consumption. Ecolodges should research and implement strategies to capture these energy sources, fig. 3-11, to achieve a fit design.



Fig. 3-11. Solar panels found at Kapawi Ecolodge and Reserve. www.kapawi.com

Capture and Re-use of Water

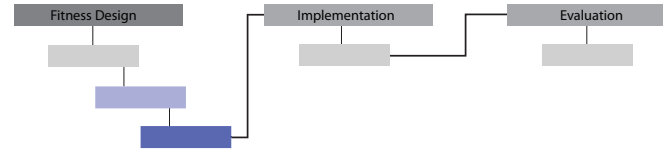
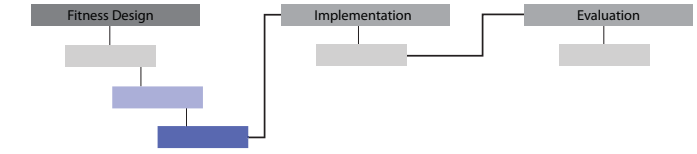


Fig. 3-12. Cisterns collect rainwater from the roof for washing hands. www.blacksheepinn.com

The collection and reuse of water is a vital component in sustaining the environment's natural resources. "Rainwater can be a liability by causing soil erosion if concentrated runoff from hard surfaces is not well managed. However, rainwater can be an asset if it is collected from roofs, large cisterns or rain barrels for use in drinking water (after treatment) or secondary water-use purposes." (Mehta 2002 p. 62) For instance, collection and careful redirection of rainwater can allow for minimal to no underground pumping, as seen in fig. 3-12. Historically, utilizing the roof to collect rainwater has proven to be an effective practice and is entirely suited to be implemented in ecolodge design. (Mehta 2002, p. 62) "Wise use and conservation of water should be a byword in ecolodge design and operation." (Mehta 2002, p. 63) Minimal usage of water from guests and operators of the ecolodge assist with water conservation. Educating about necessary water consumptions is an effective way to inform guests.

Production and Obtaining Food



Utilizing organic food, specifically vegetables and fruits, can be included within each ecolodge that contains a kitchen or restaurant. Meats should be purchased from local markets or obtained through the nearest community. Another way of obtaining meats or other food sources is to implement farms that can attend to these necessities (fig. 3-13). Sustaining the environment is not always present when eating or preparing food, though methods of acquiring food are.



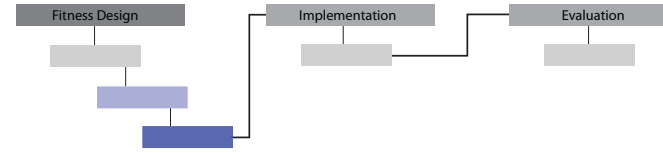
Fig. 3-13. Chickens lay their eggs in the back of the greenhouse. www.blacksheepinn.com

Recycling of Waste

“The management of waste is a critical conservation problem for protected areas, particularly given the impacts on wildlife and indigenous flora, which stand to suffer from the adverse effects of the irresponsible handling and disposal of waste.” (Mehta 2002, p. 64) Recycling on a day-to-day basis should be implemented throughout any ecolodge design. Recycling must occur from the operators to the guests. This can be achieved with trash receptacles placed throughout the ecolodge. If the implementation of receptacles occurs, education and signage should be placed along with the receptacles. Educating the guests of proper recycling methods and the effects of recycled material will encourage recycling to take place from each guest. Once trash is recycled, it has the option of being compounded into various uses throughout the ecolodge or can be transported to a local recycling center (if applicable), as shown through fig. 3-14.

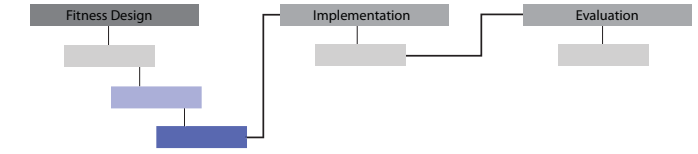


Fig. 3-14. Students get involved at the community recycling center. www.blacksheepinn.com



Purchasing Policies

Purchasing policies are an integral part in an ecolodge, especially from an operations standpoint, to ensure all products are shipped or delivered in the most sustainable way. This involves where the products are purchased and how they are purchased. A primary concern for all ecolodges, to achieve ecotourism, is to ensure monetary benefits does remain in the local communities and does not go back to another country. It should always be a goal to buy products needed at the ecolodge from local establishments. When products are only available in select areas, the method of transportation of goods should be considered. Considering packaging materials will strengthen the overall sustainability of a purchase for the ecolodge.



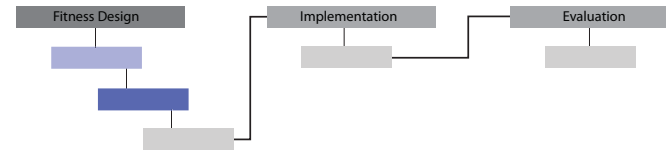
Sustainable Methods of Design

The United Kingdom's strategy for more sustainable construction, Building a Better Quality of Life, suggests key themes for action:

- Design for minimum waste
- Lean construction and minimize waste
- Minimize energy in construction and use
- Do not pollute
- Reserve and enhance biodiversity
- Conserve water resources
- Respect people and local environment
- Monitor and report (i.e., use benchmarks)

(<http://www.berr.gov.uk/files/file13939.pdf>)

Throughout the design process, sustainable methods should be considered and applied for any ecolodge development. Once the design phases are completed, the methods of how construction will be conducted should be carefully planned. An important consideration for construction is to create "building stages or phases according to a schedule of work activities, taking season and climate into consideration." (Mehta 2002, p. 42) The various construction phases should be strategically employed to ensure only certain areas of the site are affected by construction, rather



than the entire site. This helps to ensure sustainable measures are taken when designing the ecolodge.

Construction Methods

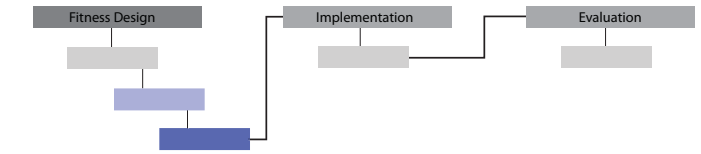


"The concept of sustainable construction incorporates and integrates a variety of strategies during the design, construction and operation of building projects. The use of green building materials and products represents one important strategy in the design of a building." Some of the benefits offered from green building materials include:

- Reduced maintenance / replacement costs over the life of the building
- Energy conservation
- Improved occupant health and productivity
- Lower costs associated with changing space configurations
- Greater design flexibility

(<http://www.calrecycle.ca.gov/greenbuilding/materials/>)

The methods applied through construction should strive to create low impact development, while designing with local materials. In the case of low impact construction, "avoid compressing soil to the point of eliminating aeration that would thus kill existing micro-organisms necessary for plant and animal life." (Mehta 2002, p. 42) When construction occurs in any development, it is often put into some form of scheduling, which works well with ecolodges. Another method of sustainable construction, in tropical locales, is the utilization of damaged or fallen trees (fig. 3-15),



because of the low impact, no cost and aesthetic feel. All construction methods must ensure the longevity of the ecolodge while minimizing the construction footprint.



Fig. 3-15. Thatch collected from Lapa Rios site to construct the bungalow roofs. www.laparios.com

Landscape Elements

It is important to realize that whatever the ecolodge specializes in (birding, wildlife viewing or mountain climbing), the natural setting is considered to be a valuable commodity which should not be disturbed by any design implementations by the designer. (Mehta 2002, p. 46) Incorporating landscape elements is common within any development design. Ecolodge design holds a unique position when discussing blending natural elements, native to the area, into a development, which is seen in fig. 3-16. The presence of unique and rare ecosystems are often found within ecolodge settings. It must remain an ultimate goal to not expose or endanger the ecosystem during the design and construction phase, even when addressing landscape elements. Landscape elements must restore the local flora while integrating local materials, both natural and man-made, into the ecolodge design. For instance, "using endemic (exclusive to the area) species whenever possible, avoiding the introduction of exotic species. This said, however, the selection of certain native species in replanting or restoration of the ecolodge grounds or surroundings will help attract different kinds of wildlife, such as butterflies, birds and mammals." (Mehta 2002, p. 47) Another common method that is applied with implementing landscape elements is collecting natural debris and reusing it to create aesthetic beauty.

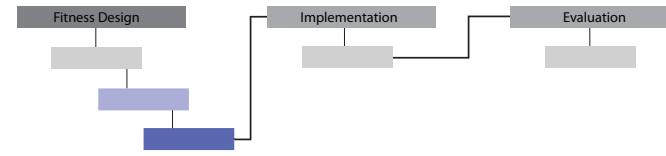


Fig. 3-16. EDSA'S design of both open and covered walkways. Photo courtesy of EDSA

Conserving

“Conserving is the maintenance of the environment, maintenance of the habitat, preservation of the environs, or the protection of the environment.” (<http://legal-dictionary.thefreedictionary.com/environmental+conservation>) Conservation methods and practices within ecolodge developments are important when discussing the longevity of an environment. “Ecolodges should play a ‘proactive’ role in conservation of natural and cultural traditions.” (Mehta 2002, p. 52) Conserving can be applied on various scales, ranging from practices performed by guests all the way down to an ecosystem standpoint.

On an ecosystem level, the environment should be monitored to understand what currently exists on site. If there are threats or current practices that are affecting the ecosystems within, a method for conservation should be implemented. It should be considered to implement conservation clauses in an ecolodge contract with the building contractor, establishing what should occur and what should not occur to ensure the ecosystem is not degraded and to allow for habitats and its species to survive. (Mehta 2002, p.53) If such measures are undertaken the ecolodges have the ability to “provide ecological restoration and interpretive programs to help enhance the local ecology and educate guests as to the sensitivities of particular ecosystems.” (Mehta 2002, p. 53)

Conservation practices should be communicated to guests and the indigenous populations. Educating these groups allows a better understanding of what practices need to be performed to ensure the longevity and continued biodiversity of the ecosystem. Most communities that are associated with ecolodges have created methods used to conserve their environments. “Ecolodges should serve as models for local communities wishing to improve their standard of living and their interaction with nature by applying simple, cost-efficient and ecologically wise solutions.” (Mehta 2002, p. 52) The guests staying at an ecolodge have an opportunity to partake in conservation methods if the ecolodge takes certain measures. Fig. 3-17 shows an observation tower that was designed by EDSA to allow users to observe the environment around them. “Visitors spending several days in a good ecolodge should be motivated to apply at home many of the environmentally friendly practices experienced on holiday.” (Mehta 2002, p. 52)

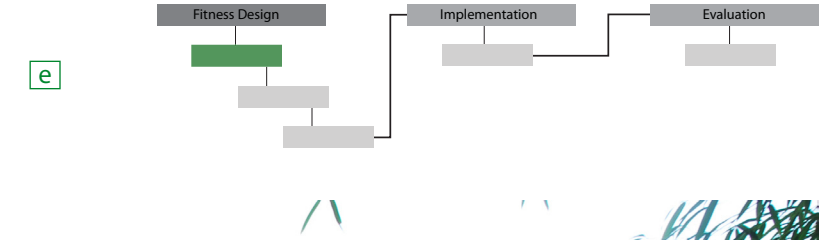
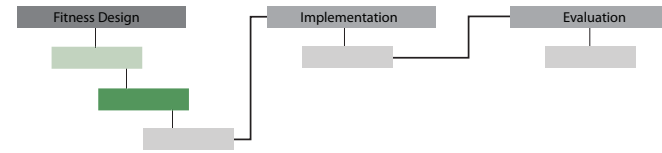


Fig. 3-17. EDSA's design of an observation tower included within the ecolodge. Photo courtesy of EDSA

Maintaining Biodiversity

“The tropics, and their moist forests in particular, harbor more species than anywhere else on the planet.” (<http://www.scidev.net/en/opinions/explaining-tropical-biodiversity.html>) Ecolodge design calls for critical analysis of their associated biota to ensure that their livelihood is maintained. The biological diversity of the variety of life on Earth is commonly referred to as biodiversity (<http://www.globalissues.org/issue/169/biodiversity>). Biodiversity enhances ecosystem productivity where every species, both large and small, has an important role to play (<http://www.globalissues.org/issue/169/biodiversity>). In terms of this manual, it is vital to understand the importance of an ecolodge and its effects on biodiversity. As most developments are in fragile or sensitive ecosystems, ecolodges must ensure minimal disturbance is brought to ecosystems so the biodiversity can be sustained.

“The natural communities in and around the site are the most important commodities being sold by an ecolodge and those assets are frequently damaged or destroyed without any consultation with biologists, ecologists, wildlife behavior specialists and zoologists, who are familiar with wild communities.” (Mehta 2002, p. 46) In remote landscapes where the natural communities should be avoided at all costs, the ecolodge operations must regulate disturbance from the standpoint of ecolodge employees, guests and indigenous populations. One way this is achieved

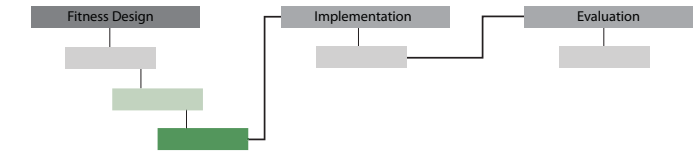


in existing ecolodge developments is providing opportunities for guests to learn about the various flora and fauna characteristics present in the area. This method enables the guest to recognize what ecosystems are present on site while bestowing them with appreciation of those associated ecosystem.

Low Impact and Education for Users

“The development and operation of tourism infrastructure and the presence of tourists have both direct and indirect impact on soils, water and air.” (Mehta 2002, p. 42) Ecolodge operators hold a responsibility, in which their guests and employees must have a small ecological footprint. The impact from guests and employees can be controlled by the ecolodge operators if proper steps are taken to implement low impact strategies. Strategies present in existing ecolodge developments include limiting the number of guests allowed on a nature tour, limiting all foot traffic to predefined trails and limiting the number of nature walks that can occur on a daily and weekly basis. Each component of the ecolodge program, if properly designed, has the ability to look natural and allow the existing ecological communities to survive. Another way in which ecolodges can design in a sustainable way for ecosystems is to create “a ‘zoning system’ and mark them on maps to prevent guests from entering sensitive territories of wildlife.” (Mehta 2002, p. 47) Ecolodges should be designed to ensure minimal alteration and disturbance on the area’s flora and wildlife. (Mehta 2002, p. 46-47) For instance, “avoid cutting down trees in order to locate facilities.” (Mehta 2002, p. 46) This theory of minimal disturbance should be applied through all areas of design.

Ensuring a low impact from ecolodges, guests and employees should be educating them on the local flora



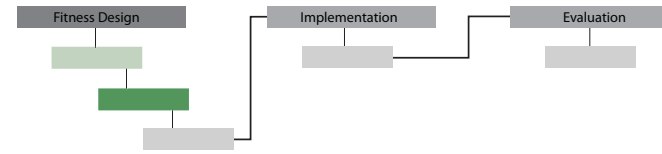
and fauna to understand the basic processes involved. For example the ecolodge management should “instruct the visitor not to disturb the wildlife, e.g., no screaming, no high-volume radios and no engines.” (Mehta 2002, p. 47) Education is essential to ensure the visitors will be acquainted with the unique features of the ecolodge. (Mehta 2002, p. 146) “It is important that the guests and indigenous populations come to understand the principles behind the ecolodge and also know how to participate in meeting the ecolodges conservation targets.” (Mehta 2002, p. 146)

Conservation Practices

“Since ecolodges are to be used mainly by tourists who are concerned with conservation matters, ecolodges should provide practical examples of harmonious interaction with nature.” (Mehta 2002, p. 52) Conservation practices look to increase the longevity of ecosystems through proven methods that either expand the ecosystem or restore it to its natural state. Specific qualities within environments, in which conservation practices can be applied, include: impacts to flora and fauna, water and air quality and soils.

The impacts brought upon flora and fauna should be minimized through proper planning and execution by the ecolodge. Ecolodges should be designed and situated outside of any fragile ecosystem to ensure the ecosystem is not compromised or damaged. In terms of conserving fauna, it is important to “build as far as possible from all known sites of animal activity, such as nesting areas, mating areas, resting areas, wildlife travel corridors, food and water sources.” (Mehta 2002, p. 47) If proper measures are taken in the site planning and inventory stages of design, the biodiversity present on site should remain abundant and will have the potential to grow.

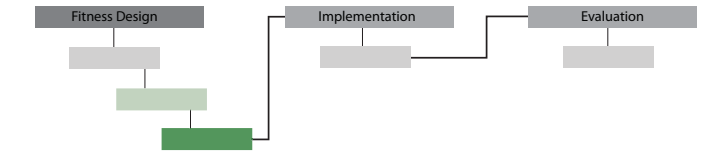
“Ecolodges can cause a range of negative impacts on surrounding water bodies, often affecting local potable water supplies.” (Mehta 2002, p. 44) The planning of the ecolodge should look to eliminate the use of diesel



motors and other products that can emit contaminants into the water and air supply. “As an environmentally sound facility, an ecolodge should consider its impact on air quality when planning and purchasing facilities and equipment.” (Mehta 2002, p. 44) “Healthy soils are an important factor of any ecosystem and all attempts should be made to preserve existing soils, before and during construction of an ecotourism facility, and to stop any human-made erosion with an effect on the site.” (Mehta 2002, p. 42)

Decrease in Deforestation

Modern practices and projects have begun to revive large expanses of forests. “Although deforestation meets some human needs, it also has profound, sometimes devastating, consequences, including social conflict, extinction of plants and animals, and climate change — challenges that aren’t just local, but global.” (<http://earthobservatory.nasa.gov/Features/Deforestation/>) Tropical ecosystems are often times targeted for deforestation practices because of the large presence of rainforests. Conservation programs can be created to raise money and awareness so large expanses of forests can be replanted. Ecolodges situated in such areas can provide support, with proper programs and projects, to conserve these sensitive ecosystems.



Permaculture

“Permaculture is a unique approach to site design that integrates landscapes, gardens, built structures, humans, flora and fauna into permanent systems. It is a design system that mimics the interconnectedness and diversity of animals and plants in natural ecosystems. It focuses on sustainable systems — those with no pollution or waste.” (Mehta 2002, p.31) Permaculture serves as a great practice in which food can be obtained and education of the guests on topics such as a garden practices, growth habits of plant types and efficient use of energy can occur.

“The main concept of permaculture is to turn waste into resources and problems into opportunities. It uses the natural cycles of plant and animal species to: heat and cool buildings; restore groundwater; aerate the soil; control erosion; build soil fertility; incorporate small-scale food production; incorporate appropriate technology and recycling; and promote reforestation.” (Mehta 2002, p. 31) Permaculture practices are common amongst many ecolodge developments, and the management of the ecolodge should implement various strategies to incorporate permaculture, if the site conditions allow. For instance, a way in which soil erosion can be controlled is to “design swales that slow down the flow of water during rainstorms, preventing erosion; and to give time for leaf-litter and seeds to penetrate the soil.” (Mehta 2002, 31) Another example of how permaculture can be implemented is

to design a greenhouse. Fig. 3-18 shows a greenhouse that was designed for Black Sheep Inn. Greenhouses serve a good housing for tree growth or where various vegetables can be produced, because of the controlled temperatures. Permaculture practices will allow for an ecolodge to reuse much of the earth’s natural resources, thus creating fitness design.

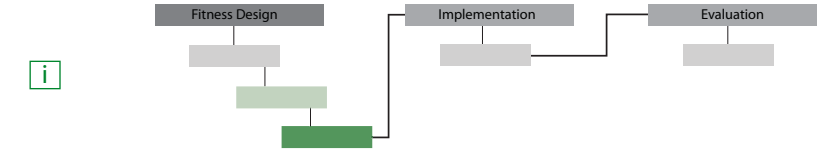
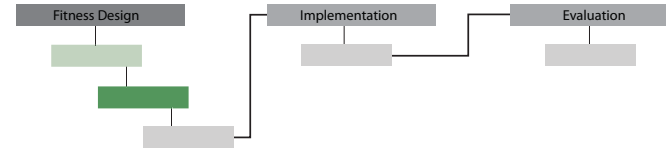


Fig. 3-18. Greenhouse found at Black Sheep Inn used to grow vegetables and house trees to be planted throughout the site. www.blacksheepinn.com

Conservation Projects

“The most commonly invoked definition for Integrated Conservation Development Projects (ICDPs) was first provided by Wells and Brandon. (1992) These authors defined ICDPs as projects that link biodiversity conservation in protected areas with local socio-economic development. This linkage means that local people living in or near protected areas are given alternative sources of livelihood that reduce the pressures on protected areas resources.” (<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTBIODIVERSITY/0,,contentMDK:20484454~menuPK:1170263~pagePK:148956~piPK:216618~theSitePK:400953,00.html>).

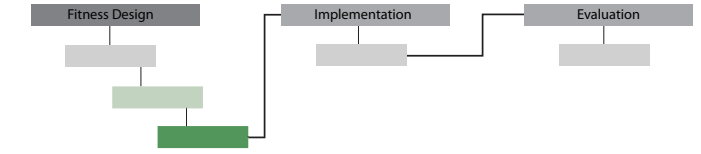
Throughout many existing ecolodges, the presence of conservation projects are present. One issue that is present when discussing conservation projects is obtaining the necessary means to create such programs. An approach that is taken is to educate local communities and government agencies about such projects and their positive contributions to the local resources. Another way conservation can be achieved is by creating “ecological restoration and interpretive programs to help enhance the local ecology and educate guests as to the sensitivities of particular ecosystems.” (Mehta 2002, p. 53) Establishing a local eco-fund to which guests can contribute will aid in the restoration and vitality of the local ecosystem and will



allow money that is donated to be spent directly to a specific conservation project (Mehta 2002, p. 53)

Funds for Local Parks and Reserves

Local parks and reserves are commonly present around ecolodges situated in remote or unique ecosystems. An ecolodge has the opportunity to be a positive contributor to such entities. If money is donated from the ecolodge (whether it be from guests or from the ecolodge itself) it will allow the parks and reserves to take action of specific conservation projects of theirs or allow for necessary facility upgrades. One way this is achieved in existing ecolodges is providing guests the opportunity to visit park and reserve sites at a discounted price. This encourages guests to experience the park or reserve, which may in turn create donation opportunities to the establishment.



Community Based Projects

Many communities have conservation projects established before the ecolodge development is instituted. Much like funds for parks and reserves, the ecolodge has the opportunity to provide monetary support to ensure the conservation projects of indigenous communities achieve their goals. An ecolodge development should extend its own conservation projects to include the communities surrounding the development. It should be the ecolodge responsibility to actively participate in the local communities, as seen in fig. 3-19, which in the case of conservation may include monetary funds or considering communities in the ecolodge's projects.

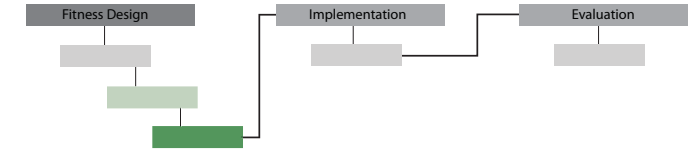
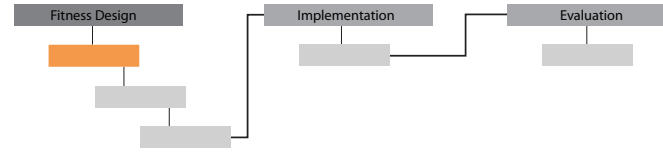


Fig. 3-19. School children learn how to sort waste materials. www.blacksheepinn.com

Experience

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In terms of this manual, experience is used to communicate how a guest of an ecolodge and the indigenous populations near the ecolodge will experience the development. In the perspective of a designer, the experience they are creating must not be overlooked since, ultimately, the experience of the ecolodge is what will draw clientele. The design of each ecolodge component, along with every amenity that is provided to the guest, should strive to create appreciation and stewardship. To ensure fitness design is achieved, a designer must design a meaningful ecotourism experience. This is achieved through proper planning to ensure the ecolodge can host not only physical activities, but learning opportunities, as well.

As outlined in this manual, the educational and cultural opportunities provided for the guests should be accounted for by the designer, in order to create a memorable and meaningful experience for the guests and indigenous populations. A goal from an operational standpoint is to create activities for guests that will bestow cultural and ecological appreciation.

Educational experiences are achieved by creating spaces and amenities in which users can gain knowledge on issues, such as cultural customs, ecological processes and the ecolodges modern practices. Environmental education can include exposing the guests to local flora and fauna and

exposure to environmental processes, such as rainwater capture and organic gardening. Cultural experiences are similar to educational, though differ in its overall goal. This goal involves exposing guests to local customs to create appreciation from the involved parties (guests, ecolodge operators and children). Cultural amenities can be included, and should be geared to bestow cultural aspects, such as local craftsmanship techniques, to the user. Other topics that could be present within cultural amenities include history of the local area, local customs and practices and local architecture styles.

Amenities

Amenities, in relation to this manual, are services or activities provided by the ecolodge development. There are various intentions of these services, though the ultimate goal is to create a desired experience, driven by the needs of its user. Physical activities are geared for both soft and hard adventure. It is important to include activities that appeal to various age and personality groups. For instance, a designer should include a healthy balance of relaxing and highly physical activities (fig. 3-20). Other activities designed for an ecolodge can include entertainment or services to enhance personal well-being, as seen in fig. 3-21. These activities are meant to create relaxing and tranquil settings for those looking to step away from their daily customs. Forms of entertainment could include live music or guest lecturers, with the goal to create a enjoyable memory for any guest partaking in the event. Whichever forms of amenities are chosen to be implemented by the ecolodge, the guests desired experiences should be understood. Ecolodges should ensure guests needs are being fulfilled so the current and new clients are retained.

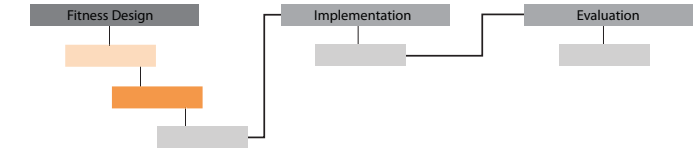


Fig. 3-20. Zipline found at Black Sheep Inn. www.flickr.com



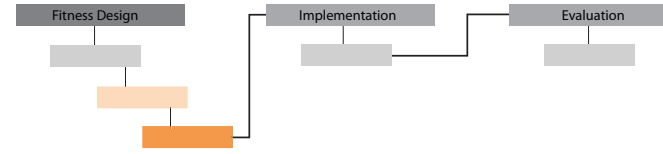
Fig. 3-21. Ozone-filtered pool (chlorine-free) found at Lapa Rios. Photo courtesy of Mark Dineen

Soft and Hard Adventure



“Soft adventure is the term used to describe the type of adventure tourism that requires little or no experience and is low risk.” (<http://www.onecaribbean.org/content/files/SoftAdventure.pdf>) “Hard tourism requires greater levels of skill and incorporates more significant risk” than that of soft adventure.” (<http://www.onecaribbean.org/content/files/SoftAdventure.pdf>) Both hard and soft tourism encompass physical activities that allow the guest to experience the local treasures near and at the ecolodge. Soft adventure, for instance, could include the following activities: bird watching, fishing, nature trails during the day and at night, small hikes, horseback riding, beach or pool activities, touring local communities and partaking in local customs. Fig. 3-22 shows a guided tour that takes guests through the rainforest. Such activities allow guests to experience new adventures and customs while not requiring a large amount of physical activity.

Hard adventure, on the other hand, can include such activities as mountain biking, intensive hikes, overnight camping, kayaking, surfing and canoeing. These activities are geared for a guest looking for extensive physical activity. Both hard and soft adventures are important to include within an ecolodge development to assure that there are activities geared for any guest. The activities that are offered to guests do not



necessarily have to involve the ecolodge. In areas with historical sites, parks or reserves provide an opportunity for ecolodges to promote their local attractions.



Fig. 3-22. Guided tour provided by Kapawi Ecolodge and Reserve. www.kapawi.com

Entertainment and Personal Well-being

Entertainment and personal well-being amenities should be included within any ecolodge if it can be budgeted into the project. Entertainment is an effective way to provide experiences for the guests of the ecolodge that will expose them to local traditions and customs. This can be achieved through live music at an ecolodge. Many communities have their own music styles that should be expressed in the ecolodge. This allows for guests and local interaction, creating a new and fresh experience for the guest.

Personal well-being elements that are implemented within the ecolodge are privileges for guests that experience them. Some examples of creating personal well-being amenities include yoga (fig. 3-23), wellness spas (sauna, massage and relaxation) and meditation areas. These amenities may only apply to certain guests, though enabling these amenities to occur will likely increase potential clientele. It is important when planning and design these amenities to remember that the environment and cultural aspects must be respected. If the amenities impede on either of these entities, alternatives should be taken.

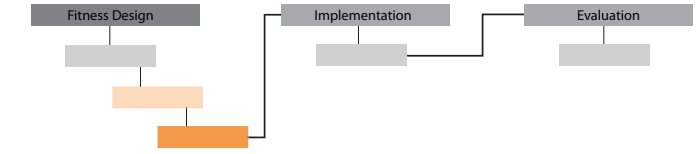


Fig. 3-23. Yoga session at Black Sheep Inn. www.blacksheepinn.com

Educational Experience

“Education is indeed one of the cornerstones of all ecolodge operations and one of the identifying characteristics separating an ecolodge from traditional lodging.” (Mehta 2002, p. 142) It is the responsibility of the ecolodge to create opportunities for its guests and local populations to be exposed to educational experiences. For the guests, in most cases foreign to the area, it provides the opportunity to bestow appreciation for the environment (fig. 3-24), local customs and practices. For instance, “visitor education on why sustainability of resources governs the ecolodge’s operations and management is essential to customer satisfaction.” (Mehta 2002, 143)

In terms of educational experiences for the local populations, the ecolodge can inform the people about various topics, including sustainability and conservation methods found on-site at the ecolodge. On a management standpoint, indigenous populations should be invited periodically to the ecolodge to partake in educational amenities. Since many ecolodges are found within unique environments, an exposure to the local treasures should be encouraged. Both guest and indigenous experiences should be present at an ecolodge development.

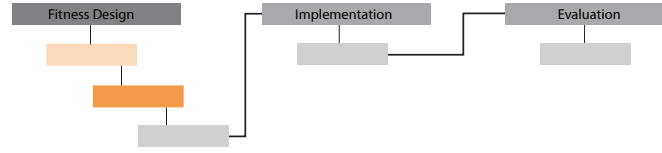
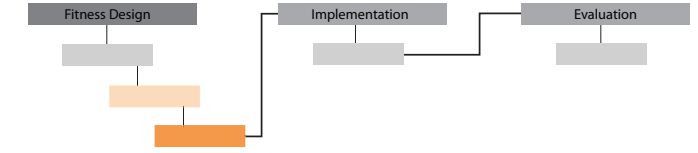


Fig. 3-24. Educational lecture at Kapawi Ecolodge and Reserve. www.kapawi.com

Programs Geared for Communities

“Successful ecolodge development depends upon a good mutual relationship with local businesses and with community leaders and organizations. Community education should begin before the area is even selected for ecolodge development. If the community sees the ecolodge as a partner, the relationship will be positive; if the community views the development as an invader, then the ecolodge will have problems with long-term sustainability.” (Mehta 2002, p. 151) Indigenous communities play a vital role in the success of an ecolodge development. It is important to include activities that involve the indigenous communities.

Ecolodges can involve indigenous communities through activities including: nature tours, ecological interaction and allowing small class sizes to the ecolodge, so they experience the environment. Ecolodges have the opportunity to create programs geared solely for the communities. For instance, existing ecolodges have created environmental education for local schools, teaching students about the sustainable practices and conservation efforts at the lodge. To ensure the local communities are benefiting from the ecolodge development, a designer must ensure that programs and activities involve the indigenous communities.



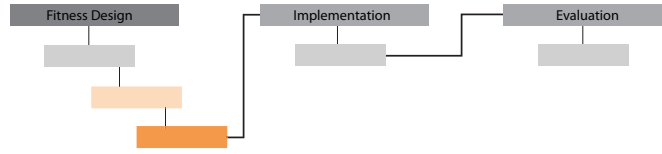
Environmental Education Programs

Environmental programs are intended to educate not only the ecolodge guests, but the indigenous populations, and serve as an adequate technique to instill an educational experience. Implementing environmental education programs provides the guests with a unique experience since many are foreign to the native ecosystems and processes. For instance, providing signage along nature trails, that informs guest of local flora and fauna and their characteristics, is a way to involve guests in an environmental experience.

A consideration that designers and ecolodge operators must account for is the ecosystem itself. Programs for environmental education should not compromise any ecosystem on or off site. It should be conveyed to guests, and enforced by tour guides (fig. 3-25), that their interaction with sensitive ecosystems should be kept at a minimum. If specific ecosystems should be avoided at all times, because of their vulnerability, guests should be aware that they are not to enter such areas. Instances such as this, should be monitored by the employees of the ecolodge.



Fig. 3-25. Tour guide at Lapa Rios used to navigate and inform guests during tour experience. www.laparios.com

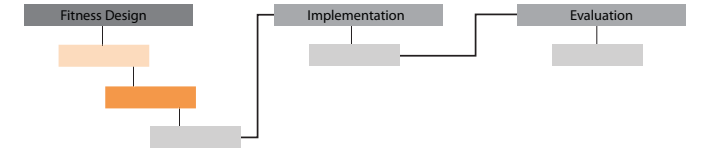


Cultural Experiences

Where some “ecolodges” fall short is in the integration of local customs and practices of the indigenous populations. As a designer and ecolodge operator, one must integrate cultural practices, customs and traditions to ensure a cultural experience is bestowed to its guests. This can be achieved by organizing or encouraging tours to local communities and exposing guests to local areas (fig. 3-26) with interesting history. In some cases, ecolodges are in close proximity to archeological sites, city ruins and interesting environmental qualities (rainforests or viewsheds). It should be considered by the ecolodge operator to hire a part-time tour guide, ideally local to the area and multilingual, for such tours to occur. Another example of cultural experiences includes allowing indigenous communities to visit the site and bring local crafts and arts. In some cases, ecolodges organize hands-on experience for guests to partake in making pottery or practicing the local practices of craftsmanship. Though in any case, ecolodges should encourage guests to visit local communities to experience how the community lives their day-to-day lives.



Fig. 3-26. The Zumbahua market near Black Sheep Inn. www.blacksheepinn.com



Site Qualities

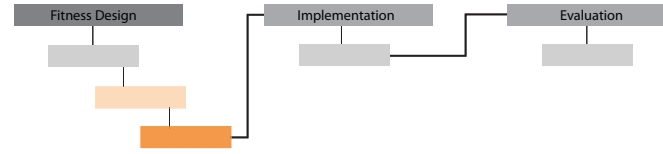
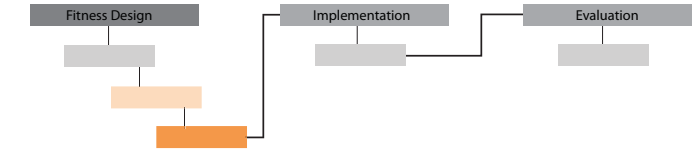


Fig. 3-27. Suite balcony view at Lapa Rios.
Photo courtesy of Mark Dineen



Fig. 3-28. Bungalow architectural style.
Photo courtesy of Mark Dineen

Interaction with Employees



One of the simplest ways to create cultural experience for the guests is to create interaction between the guests and employees, seen in fig. 3-29. Interactions between guests and employees will occur on a daily basis. For instance, a common occurrence of interaction could include guests asking employees

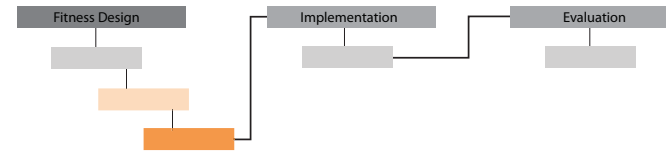
about a local attraction to visit or information about surrounding communities. With this in mind, it is vital the majority of the employees are native to the area and are multilingual. This notion of guest/employee interaction will be further discussed within the standards and education of employees' criteria.



Fig. 3-29. Lapa Rios employee interaction before nature tour begins. www.laparrios.com

Tours to Communities and Off-Site Locations

As discussed within the experience principle, providing tours to surrounding communities and off-site locations should be allocated by the ecolodge. Activities or areas to visit in the local communities should be expressed to the guests from the ecolodge operations. Ecolodge developments should notify local communities that guests will be traveling to their communities periodically. This allows for any concerns by the ecolodge or indigenous populations to be resolved and avoided. Off-site locations provide guests with a unique experience, since most guests are foreign to the area. As discussed earlier, such locations can include parks, reserves, archaeological sites, historical areas and unique environments. Ecolodges should create organized tours to such locations, with a trained and knowledgeable guide, so the guests can gain education while touring. Some existing ecolodges have given guests and employees discounted fees to locations to promote such establishments.



Shops and Classes

Since true ecolodges strive to create cultural interaction with its guests, designating areas or facilities for shops and classes to occur should be included within the development. Facilities to encourage educational activities allow the guest to gain hands-on experience with the local customs and practices. Such classes and shops can include construction methods and local craftsmanship, as shown in fig. 3-30. Once again, if such activities are to take place at the ecolodge, the design process must allocate attention to creating facilities. If facilities are determined unnecessary, the ecolodge should create spaces where hands-on activities can occur.

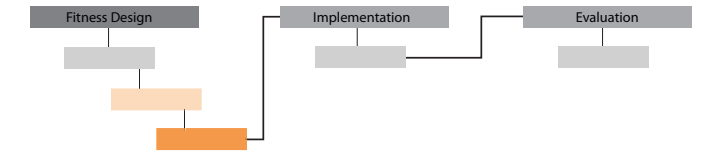
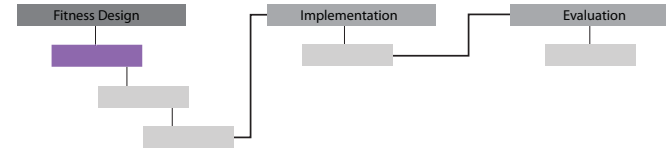


Fig. 3-30. Guests are exposed to local construction methods at Ranweli Holiday Village. www.ranweli.com

Operations

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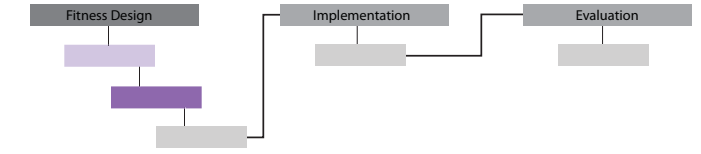


site inventory and analysis, site design, construction, program development, staffing and operations. (Mehta 2002, p. 143) “Understanding the reasons for developing sustainable concepts and linking these concepts to successful accomplishments of economic and long-term marketing goals creates a comprehensive framework for decision making on owners, investors, and operation managers.” (Mehta 2002, p. 143) Planning for measures to be undertaken for the ecolodge development will allow for smoother operations and ensure fitness design is accomplished.

In terms of this manual, operation is referred to the daily operations and standards of the ecolodge. The day-to-day operations of the ecolodge ensure that what was planned, during the design process for the development is executed properly. The operations of the ecolodge should carry out the manual principles each day to ensure the ecolodge is performing to its full potential. The operations start with the owner and are carried out through the employees. Education should occur for the owners, operators and employees of the ecolodge. “Business people involved in property purchase, investment for development or in the day-to-day operations of ecolodges typically have a background in traditional tourism, with little or no knowledge regarding how to maintain an acceptable return on investment (ROI) while protecting natural and human environments. Nor, do they grasp the importance of establishing and maintaining the integrity of their sustainable ecolodge operation and the role this will play in marketing and their ultimate bottom line.” (Mehta 2002, p. 143)

The education that should occur will allow the associated parties (owners, planners, designers, developers and operators) to gain knowledge that will increase the efficiency and operations of the ecolodge. An education program should be implemented, beginning with the development of a business plan and continue through the site preparation, site planning,

Ecolodge Operation Responsibilities



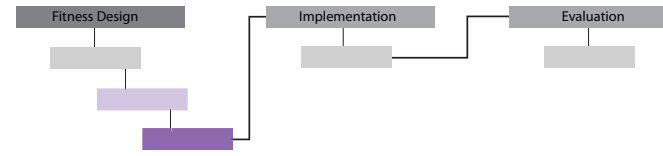
“Ecolodges are directly dependent upon the quality and sustainability of the natural/cultural resources, both on their property and on surrounding lands.” (Mehta 2002, p. 153) Management oversees all operations of the ecolodge, so it must be stressed that their responsibilities reflect the success of the ecolodge. When referring to managers, this includes ecolodge general managers, departmental managers (hospitality, sales and marketing, food service and maintenance), staff supervisors responsible for employee training and managers responsible for enforcement of rules and regulations. (Mehta 2002, p. 153)

The bottom line for successful management operations is to ensure the managers are able to identify the guests’ needs. All managers within the ecolodge development should be educated on the ecolodges impact on local resources. This can be achieved by “providing training to managers on the green economic benefits of good habitat or land management.” (Mehta 2002, p.154) Another way that operators are educated on environmental aspects is achieved by “ensuring that all ecolodge operators — general managers, in particular — are well trained on sustainability principles.” (Mehta 2002, p.154) If such measures are taken, to educate managers of their impacts on the environment, the ecolodge is more likely to “fit” into the landscape, rather than degrading it.

Standards and Education of Employees

“All ecolodge staff members should, first and foremost, be readily able to tell anyone what makes the ecolodge different from an ‘ordinary’ lodge.” (Mehta 2002, p. 154) The staff within the ecolodge development must be knowledgeable about the ecolodge’s sustainable and conservation practices. From a guest’s perspective, often foreign to the development, they will be curious how the ecolodge is different from a traditional lodge. Ecolodge staff should be able to articulate its own measures and practices conducted on a daily basis to assure guests the development looks to promote the environment for which it is part.

Since many guests are foreign to the area, the ecolodge staff must be able to communicate to them, which should be noted when hiring staff. This can be achieved by “writing an excellent operations handbook in advance of hiring staff and, if necessary, have it translated into local languages. These guidelines for all departments and operations staff should outline expectations and policies.” (Mehta 2002, p. 154) Designing a manual, as such, will ensure individuals interested in working at the ecolodge will be acquainted with what is expected on a daily basis. Creating a healthy relationship with all parties (operation managers, staff, guests, and indigenous populations) of the ecolodge will allow for better and more reliable interaction and communication.



Involvement in Community Projects

Since the sustainability of the ecolodge pivots on a healthy relationship with the surrounding communities, the ecolodge should partake in existing community projects. The list of community projects can vary depending on locale. It is important for an ecolodge to realize the importance of community projects and actively participate and contribute to these projects. For instance, if a surrounding community has a recycling center the ecolodge should take its solid waste to such facilities, which is portrayed in fig. 3-31. Another example of how involvement can occur is buying local produce and meats from community gardens and markets. Positive involvement from the ecolodge will enhance and sustain local community projects.

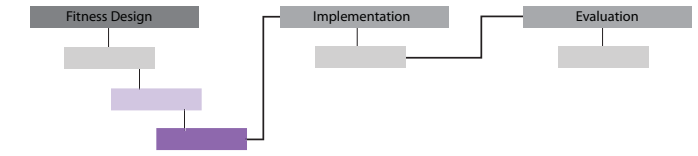
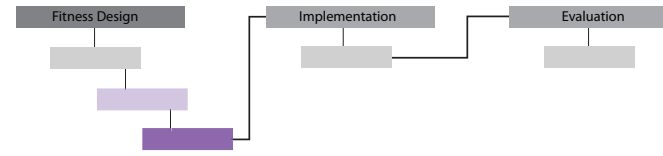


Fig. 3-31. Transporting of recycled waste at Black Sheep Inn. www.blacksheepinn.com

Local Employee Benefits

It is important for any ecolodge development to provide incentives to its staff members. This can include providing discounts or free tours of local attractions. Much like a guest, an ecolodge should strive to educate and inform its guests on the local attractions of the area. Another benefit that can be given to the staff is educational classes or lectures on topics of their choice. For instance, staff members may be interested in the processes that occur in the sustainability practices of the ecolodge. Such educational experiences will not only inform the staff of the various practices at the ecolodge, but will enhance their ability to discuss such practices to the ecolodge guests.



Ecolodge Components

In terms of this manual, ecolodge components entail the specific buildings to be included with the ecolodge development. These components begin to take form during the fitness principle, specifically during the site planning, site inventory and analysis and site design phases. It is of utmost importance that the ecolodge components “fit” into the ecological (fig. 3-32) and cultural contexts. If proper site planning, inventory and analysis, and design occur with such contexts identified, the lodge, in its structural and physical form, will achieve fitness design. The following criteria outline major components that are included within many ecolodges.

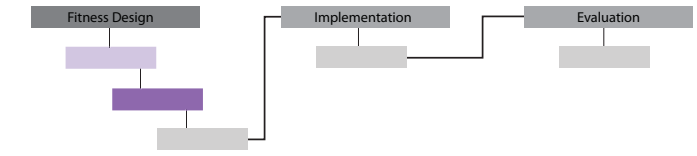


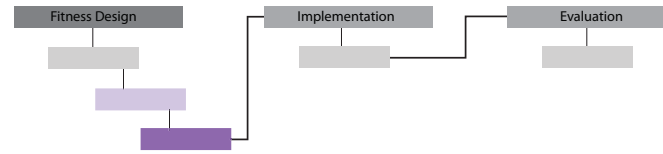
Fig. 3-32. Ecolodge components found at Kapawi Ecolodge and Reserve. www.kapawi.com

Management and Operation Building

Within any tourism development, the institution of an administrative building (fig. 3-33) is included. The same is true for the institution of any ecolodge. The “management and operation” building allows guests to check-in, house staff and operators throughout the day and provide information for the guests. The design of the building is completely dependent on the locale, though it should be reflective of the other ecolodge components. Once again, the design of the building should allocate enough space for administrative tasks to occur and the building should not occur within any fragile ecosystem.



Fig. 3-33. “Great Room” found at Finca Rosa Blanca. Photo courtesy of Mark Dineen



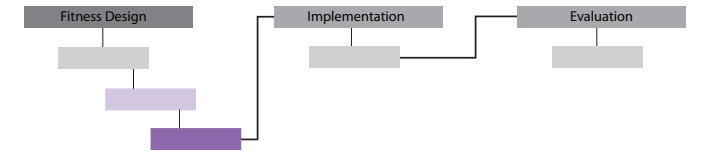
Sleeping Accommodations

The aesthetics and number of sleeping accommodations should reflect other ecolodge components, and house the amount of guests designed to stay at the ecolodge at one time. It should be considered by the ecolodge to allocate different sleeping accommodations. This could include one room suites (fig. 3-34), rooms for families or rooms intended for larger amounts of people to sleep in. A healthy mix of sleeping accommodations should be incorporated to increase the potential number of clientele. Often included in the sleeping accommodations are areas for hygiene and relaxation. For example, ecolodges in coastal environments should design spaces within the room where a guest can relax and view the ocean.

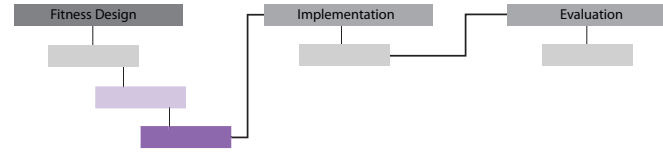
Common to other ecolodge components, the rooms should allocate the necessary space for a guest to sleep, shower and unwind. The rooms should not take up unnecessary space, since this is often costly to the environment. Daily cleaning of the rooms should be provided by the ecolodge, to assure the guest is spending much of their time participating in ecolodge activities and visiting local attractions.



Fig. 3-34. Treetop suite at Chaa Creek. www.chaacreek.com

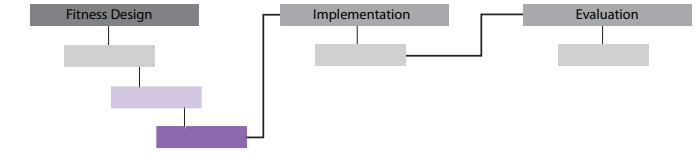


Luxury Accommodations



Luxury accommodations refer to buildings that house entertainment and well-being amenities. Such buildings could include spa center, yoga facility, library or a craftsmanship room. These buildings should reflect the other ecolodge buildings and be maintained much like the sleeping accommodations. The major purpose of luxury accommodations is to allow guests to partake in activities common to them. There should be a healthy balance of luxury accommodations found at an ecolodge development, to ensure guests are spending much of their time exploring the ecolodge and surrounding attractions.

Restaurant



Common amongst any tourism development is the inclusion of a restaurant. Ecolodges should look to incorporate a restaurant, but should generate ideas to create a specific dining experience. The restaurant provides an opportunity for local cuisine and entertainment to occur on a daily basis. The ecolodge should encourage guests to try new cuisine, while and advise guests to not travel to larger establishments common to the guest. It is important to design the restaurant to capture viewsheds over the ecolodge (fig. 3-35), to create peaceful settings while dinning. The food served at the restaurant should be local to the area, to allow guests to try local cuisine. If an organic garden is included within the ecolodge, a close proximity between the garden and restaurant is desired. Much like all ecolodge components, the restaurant should be designed to house the necessary amount of guests that the ecolodge could have at any given time.



Fig. 3-35. Lapa Rios restaurant with spiral staircase leading the observation deck. Photo courtesy of Mark Dineen



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Intent

In order to exemplify fitness design, I have included an implementation chapter, within the manual, intended to show a select group of design criteria (from each principle) that has been implemented in tropical ecolodges. Fig. 4-1 was generated to show the process of the implementation chapter.

This chapter enables a designer to further explore design criteria and their associated considerations to better understand how they can be applied to an ecolodge development. The criteria that were chosen were able to be portrayed graphically by using photos, computer generated graphics and hand graphics. The selected ecolodges were used to help form structure and content for the design principles, guidelines and criteria. The graphic portrayal of these ecolodges is intended to show concrete examples of how the selected fitness design criteria could be applied.

It is important not only to include visual representation of the design criteria, but also show the underlying systems and processes, where applicable. Along with the graphic portrayal of design criteria, it was important to include literary sources to further inform the design criteria considerations.

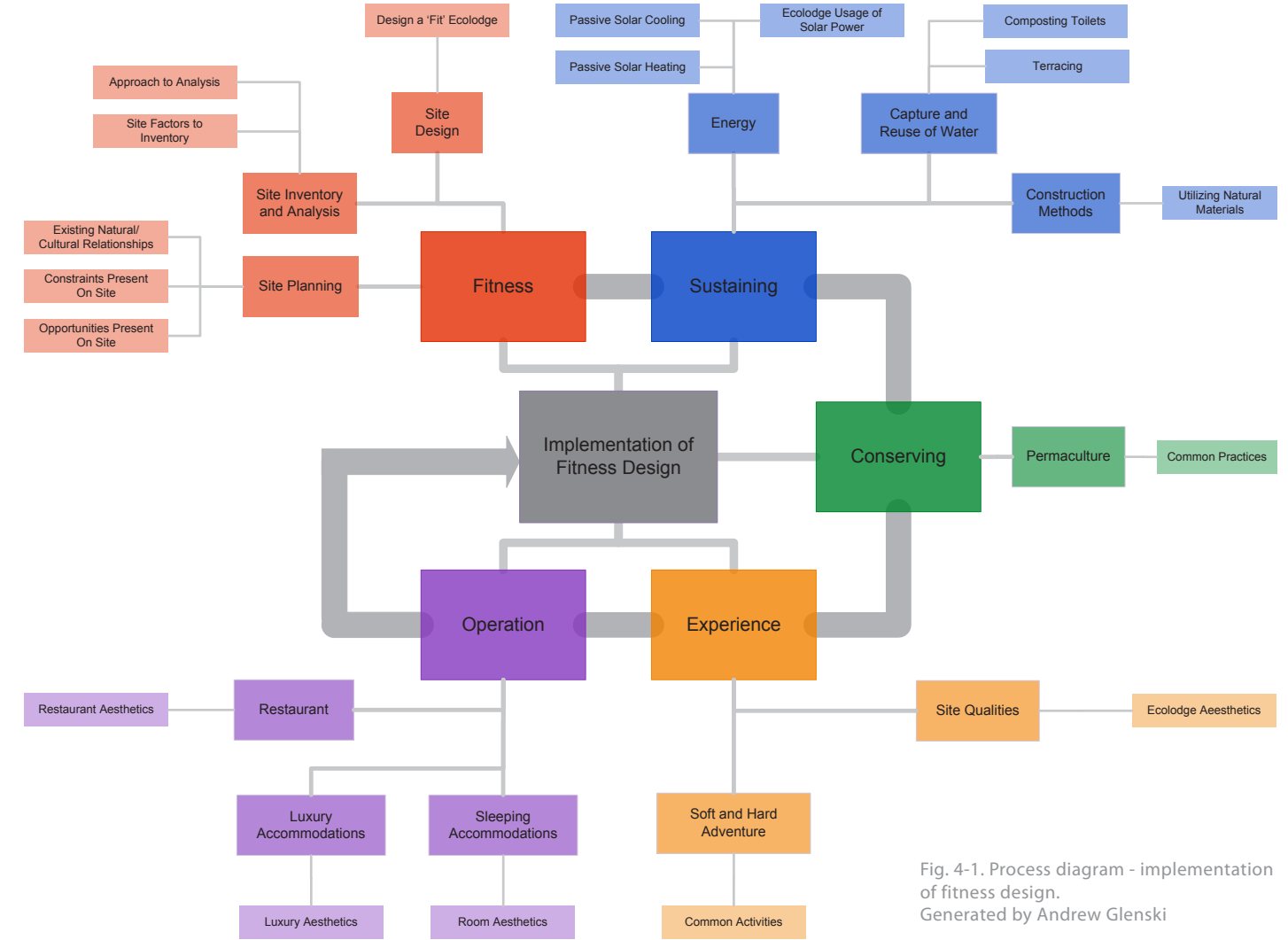


Fig. 4-1. Process diagram - implementation of fitness design. Generated by Andrew Glenski

Site Planning Context

The site shown below is a theoretical site in which an ecolodge development could be designed. Fig. 4-2 depicts the boundaries of the site which are outlined with an orange line, while the developable area is marked with the yellow dashed line. The existing site is situated on a large tract of land bordered by the Atlantic Ocean to the north and the El Yunque Rainforest to the south. This site will be used to portray the site planning stages.



Fig. 4-2. Site planning - context map. Generated by Andrew Glenski

Site Planning

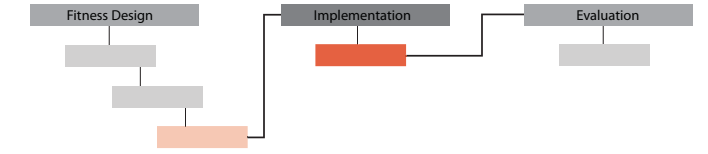
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Opportunities Present on Site

The opportunities within a selected site should be noted to understand how a design can capture or utilize aspects displaced throughout the site. Opportunities are purely dependant on what the site has to offer. The selected site provides opportunities that include viewsheds, a close proximity to local attractions, exposure to natural features and existing landforms (ridges), which can be seen in fig. 4-3. The site depicted below shows how a designer can conduct an analysis study to portray opportunities existing on site.



Fig. 4-3. Opportunities present on site. Generated by Andrew Glenski



The highly vegetated areas and open space was documented to assure ecolodge amenities could utilize these existing features. The vegetation areas provide an opportunity for user interaction and education on various fauna types native to the area. Fig. 4-4 demonstrates a natural setting near the selected site that could be viewed as an opportunity, in which guests could experience the local ecological aesthetics. Open space is important to consider when addressing areas where ecolodge components can be placed. Identifying

Site Planning

Opportunities Present on Site (cont.)

viewsheds and ridgelines provide designers areas in which users can capture views of the ocean. Viewsheds are an important aspect of experience, since users are typically exposed to great views of landscapes.

It was important to document the existing pathway found on the selected site. This existing pathway can allow for minimal disturbance to the landscape, if roads are intended for the ecolodge. If trails are instituted on the site, the existing pathway can achieve a direct route, while causing minimal disturbance. Designers should document such factors to assure the ecolodge takes advantage of the existing opportunities.

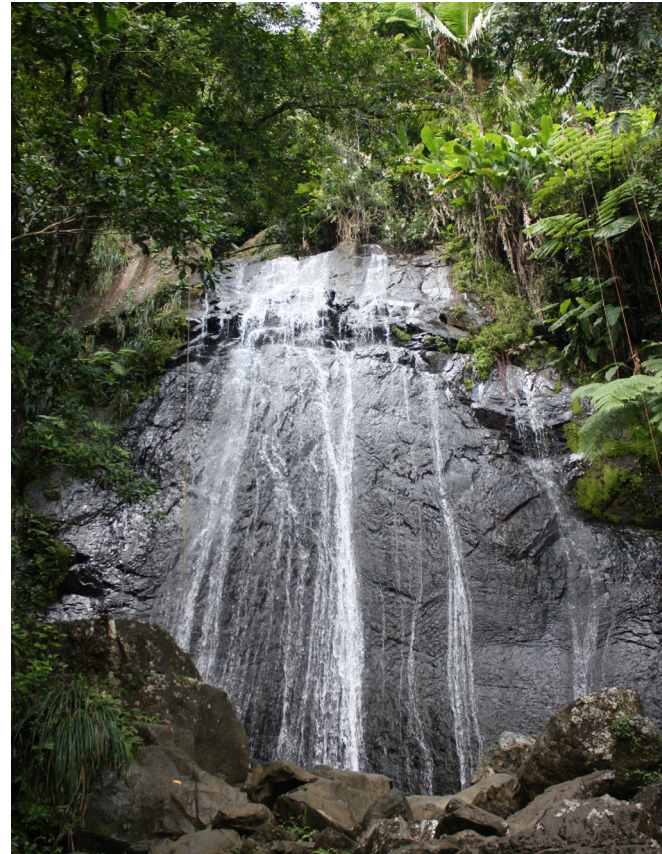


Fig. 4-4. Waterfall at El Yunque Rainforest (Puerto Rico). Photo taken by Andrew Glenski

Site Planning

Constraints Present on Site

Constraints present on site are important to document so fitness design can be achieved. Constraints are marked areas or entities that present an issue that must be factored into the site design process. Constraints can include areas of sacred or undevelopable land, sensitive ecosystems that must be avoided and areas that are within close proximity to communities or existing uses. Much like opportunities, constraints are dependent on the selected site. The following constraints that are present on site include storm surge setback, undesirable development areas

Map Key



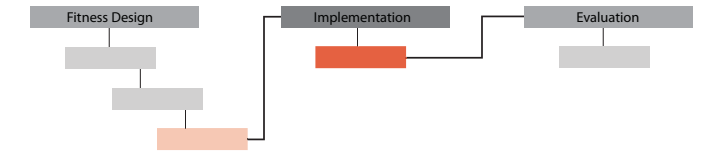
-  flood plain
-  highly vegetated
-  storm surge setback
-  north



Fig. 4-5. Constraints present on site. Generated by Andrew Glenski



and the location of the flood plain. These constraints inform the design process by identifying factors that must be avoided or areas that should not be developed.

In tropical locales, especially coastal environments, storm surges are important to consider. Ecolodge development must determine where a safe setback can be established to ensure tropical storms will not impede on ecolodge components. Storm surge precautions should be taken by the designer to ensure safety for its guests and operators. In the selected site, a designer

Site Planning

Constraints Present on Site (cont.)

should not place any ecolodge buildings within the established setback to ensure ecolodge buildings will not be destroyed or flooded. The flood plain on site presents a constraint similar to the storm surge. With the presence of steep slopes a designer should not place any major activity areas in the flood plain.

Other factors communicated through the analysis diagram are areas where ecolodge development and construction is undesirable. In this case, areas are marked as undesirable because of the presence of steep slopes, conveyed through fig. 4-6.. Although ecolodge buildings can be designed on stilts, the steep slopes create difficult connections for visitors. Designers must recognize where constraints are present on the existing site to ensure a fit design is communicated throughout the design process.



Fig. 4-6. Undevelopable slopes found at the El Conquistador Hotel in Puerto Rico. Photo taken by Andrew Glenski

Site Planning

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Existing Natural/Cultural Relationships

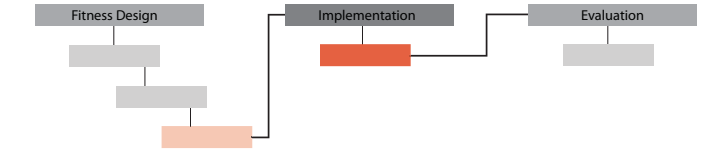
For a designer, determining relationships between the proposed site and its surrounding uses is crucial. A fit design will incorporate ecolodge components into the existing landscape on site while not compromising the indigenous populations. The relationships communicated through fig. 4-7 include ambient noise from the existing communities, community viewsheds onto the site and the proximity from each community to the primary developable area of the site. Understanding these relationships can relieve issues that may have been otherwise caused by poor planning.

Map Key

-  ambient noise
-  community viewsheds
-  community proximity
-  north



Fig. 4-7. Existing natural/cultural relationships. Generated by Andrew Glenski



The ambient noise from each community was documented to ensure the experience at the ecolodge is one of tranquility and relaxation. If the communities contain major roads and destinations, the noise created from such entities (horns, sirens, cars and trucks) could possibly yield a poor experience for the guest. The viewsheds within the site (fig. 4-8) should be considered to enhance a user's experience, though the existing viewsheds from each community onto the site should not be disrupted. In the case of this existing site, there is a presence of an undisturbed landscape with unique

Site Planning

Existing Natural/Cultural Relationships (cont.)

natural features. A designer should realize that the existing communities may have visual connections to the site, so ecolodge components should not disturb them.

An analysis of the existing connection from the site to the communities was documented. This allows the designer to enhance existing connections, in which the ecolodge can direct guests to each community. It is important to determine the distance between each destination, to verify if the pathways are practical for guests to travel along.



Fig. 4-8. Viewsheds from within the selected site onto the Atlantic Ocean. Photo taken by Andrew Glenski

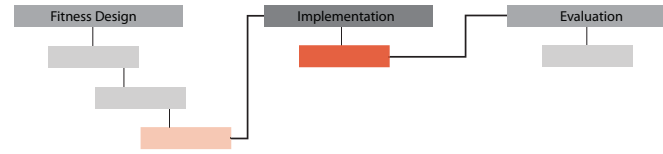
Site Inventory and Analysis

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Site Factors to Inventory

The following graphics, found within fig. 4-9, are the site inventory and analysis stages conducted for a proposed ecolodge development, courtesy of Edward D. Stone & Associates (EDSA). The inventory diagrams included within this selected project include elevation and hydrology, slope, slope aspect and vegetation. These factors should typically be present within any inventory of the existing site. Understanding the existing site context, specifically the ecological and cultural processes, enables an informed analysis and is vital to ensure fitness design is achieved. When inventorying, it is important to create ranges in which the data will be portrayed and analyzed. For instance, the vegetation map inventories areas comprised of the following vegetation types: agriculture, bamboo, river vegetation, green forest and unknown vegetation. These types of vegetation are common to a local area, so a study should be completed to understand the local vegetation, which is located on and around the site.

The elevation and hydrology diagram is important to complete and will further enhance the validity of the opportunities and constraints identified through site planning. The ranges of elevation should be clearly marked and identifiable. This includes introducing various colors to separate the elevations (red meaning highest and blue meaning lowest slopes) into different classes. EDSA choose to overlay a hydrology map on top of the elevation map to show where water will be



flowing. This will further define specific areas that may be in the watershed. Both slope and slope aspect are typically found in any form of ecological inventory. Slopes are able to communicate to the designer where areas are steep or more level. Slope aspect shows the designer where slope faces are oriented, to better understand how the slopes will look on site. Both slope studies are important to consider since many ecolodge components, amenities and practices will occur on them.

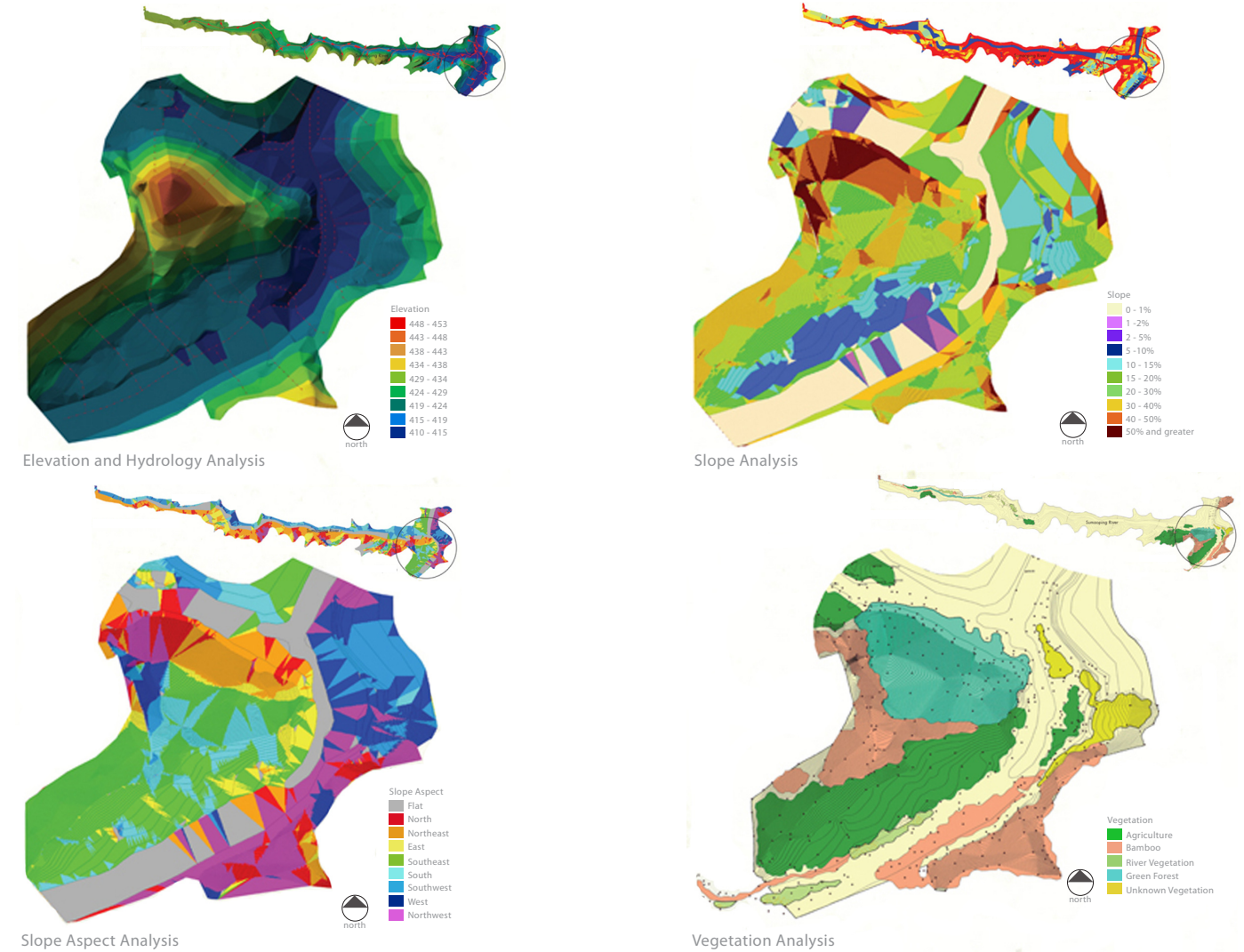


Fig. 4-9. EDSA inventory and analysis diagrams for an ecolodge development. Courtesy of EDSA.

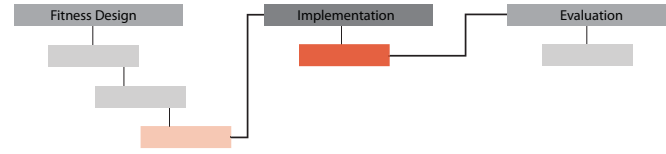
Site Inventory and Analysis

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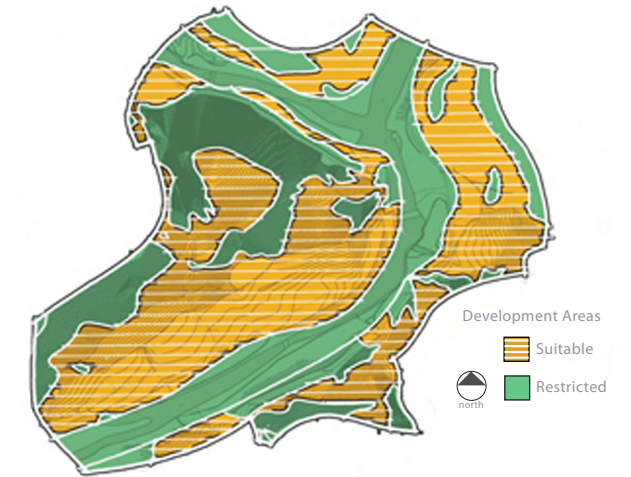
Approach to Analysis

The following graphics, fig. 4-10, are the diagrams that were involved in the site inventory and analysis stage, though take a new representation form for site analysis. The major goal to achieve when performing a site analysis is to mark areas of low, medium and high suitability and vulnerability. This informs the design process, by depicting areas in which various ecododge components can be placed.

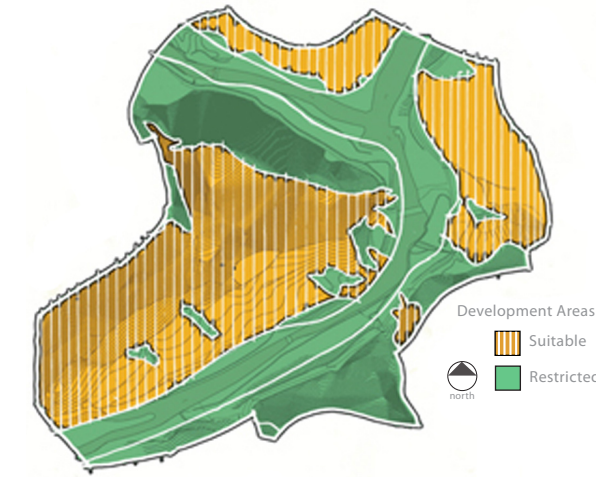
EDSA's process of analysis, would have started with an evaluation of the various inventory maps. Specifically, the ranges for each inventory map would have been reclassified to determine whether a specific area is suitable or restricted. For instance, the elevation map was reclassified so that areas with an elevation higher than 438' would be classified as restricted. This method would be applied to the remaining diagrams to create a uniform classification system across all diagrams. EDSA's next step was to create the actual graphic that would allow for a final analysis of all inventory pieces to occur. Their method was to create four different hatches patterns (angle of line) for all areas marked as suitable. On the other hand, areas marked restricted were given a green fill color.



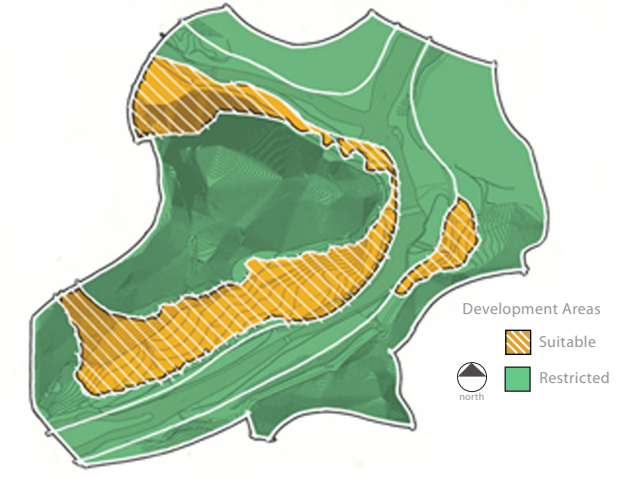
Elevation and Hydrology Suitability



Slope Suitability



Slope Aspect Suitability



Vegetation Suitability

Fig. 4-10. EDSA analysis diagrams for an ecododge development. Courtesy of EDSA.

Site Inventory and Analysis

Approach to Analysis (cont.)

Fig. 4-11 depicts the final steps to conduct a thorough site analysis. Once all the analysis diagrams were given their suitable and restricted areas (graphic portrayal completed), an overlay method was implemented to further analyze the existing site. The diagrams were placed on top of one another to show how the four different maps related to one another.

The method of analysis conducted by EDSA was to identify areas with dense, moderate and light areas of hatches. The hatches refer to suitable areas for design, so once the maps are overlaid, areas with the densest hatch patterns meant areas most suitable and areas the least amount of hatches meant the area highly restricted. This method is an effective way to graphically portray inventory and analysis factors, giving validity to the design process.

The next step in analyzing the data would have been to draw boundaries over the various types of suitability and restriction. Once again, a classification system is effective to specifically label areas, in which EDSA decided on prime, secondary, qualified, restricted and flood zone. Prime, secondary and qualified mark areas that are suitable for ecolodge development and construction. The specific program element to be designed would determine whether an area is truly suitable or not. Finally, areas marked in the flood plain or restricted would allocate that components and

construction will not be conducted. EDSA's approach in blending various data types is effective and allows for an informed and fit design.

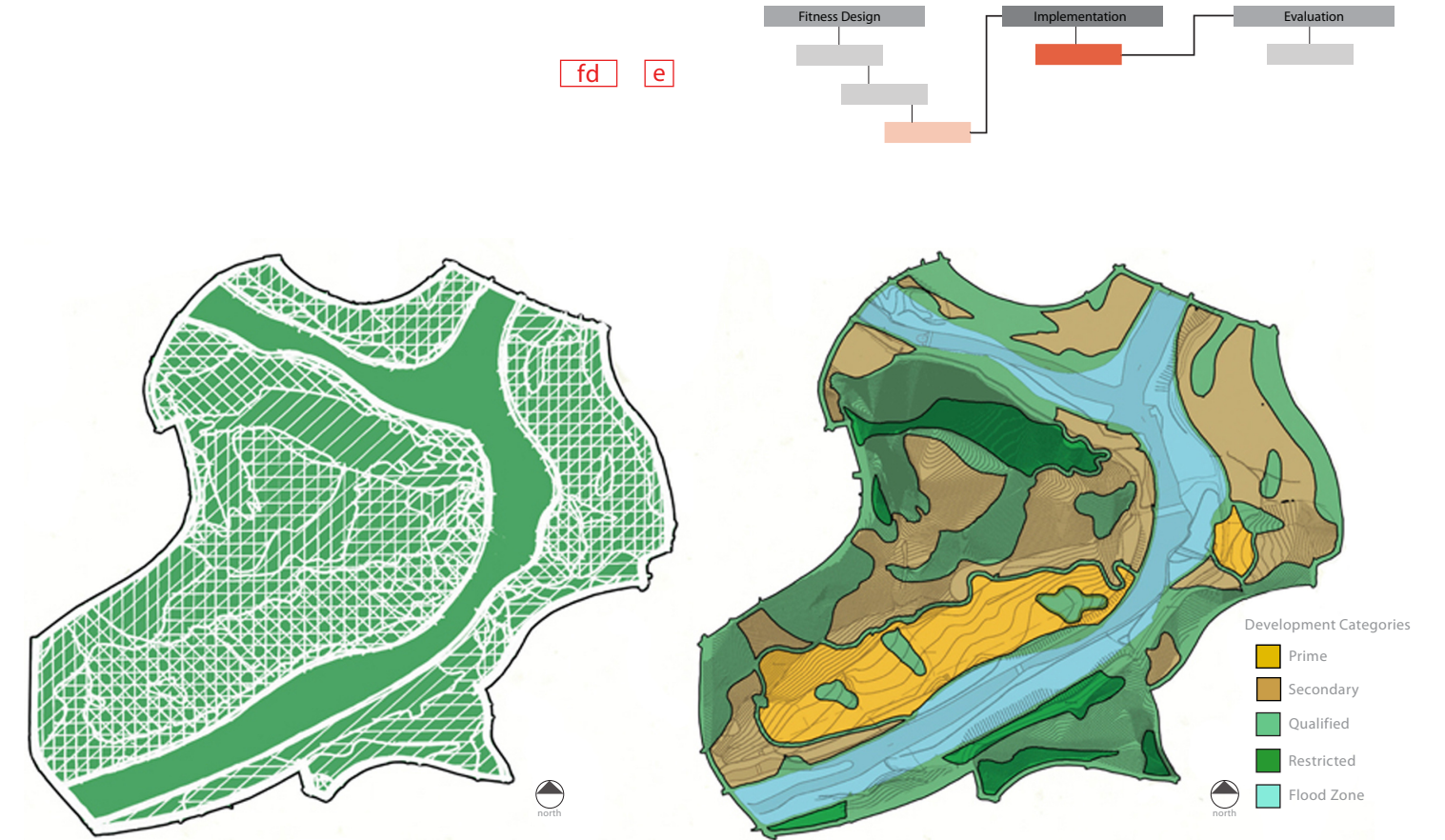


Fig. 4-11. EDSA final analysis diagrams for an ecolodge inventory and analysis. Courtesy of EDSA

Site Design

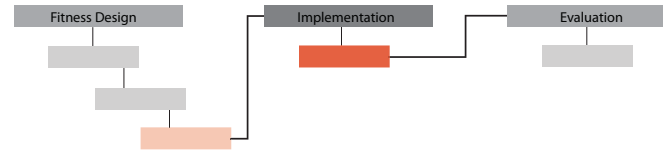
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Designing a 'Fit' Ecolodge

Once all inventory and analysis steps are completed, a design can be conceived. Typically there are various steps throughout the specific "design" process, including conceptual design, schematic design, design development and construction documentation. All of these steps focus on different aspects of design. For the purpose of the site design criteria, within the implementation chapter, the final design is shown in fig. 4-12.

The accompanying design plan allocates where each program element, that is included within the ecolodge, is located. When designing, it is important to always consider the program for the ecolodge, to ensure all components are present in the design. Another important reason for considering the program, is to ensure the desired proximity between each ecolodge component is achieved. Specific design decisions, such as form and function of ecolodge buildings, interior and exterior finishes (color, material and texture) of accommodations and the architectural style represented at the ecolodge, should all be incorporated. These design decisions are purely dependent on the location of the ecolodge and the overall goal of the development.

The ecolodge design, first and foremost, must achieve fitness design by incorporating all applicable design principles, guidelines and criteria outlined in



this manual. Once the components of fitness design are incorporated (throughout all stages of development) a fit design can be achieved, allowing guests to experience the ecolodge, while not compromising the ecological processes and indigenous populations.



Fig. 4-12. EDSA's final proposed ecolodge design. Courtesy of EDSA

Energy

Passive Solar Heating

The two major components of passive solar heating include glass windows facing the sun during the morning and afternoon (sun travels on equator, so dependent on location windows will be on opposing walls) and thermal mass to absorb, store and distribute heat (<http://passivesolar.sustainablesources.com/>). The three types of methods in creating passive heating include direct, indirect and isolated gains.

Direct gain is a technique used to allow the natural sunlight into a living space, where the thermal materials within the space can absorb and redistribute the heat. Fig. 4-13 represents the strategically placed window(s) that allows for sunlight to enter the space, in which the thermal mass materials and objects can store the heat throughout the day. "At night (fig. 4-14), the thermal mass radiates heat into the living space. This technique will utilize 60 - 75% of the sun's energy striking the windows." (<http://passivesolar.sustainablesources.com/>)

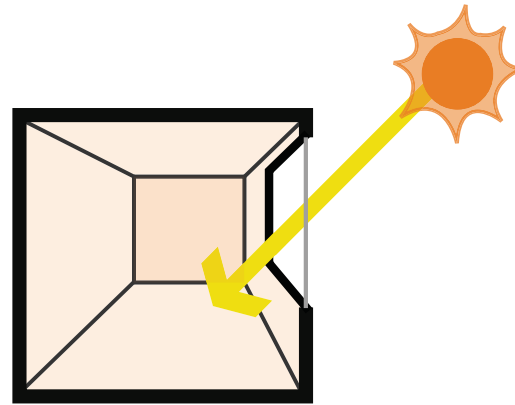


Fig. 4-13. Direct gain - sun facing window.
www.passivesolar.sustainablesources.com

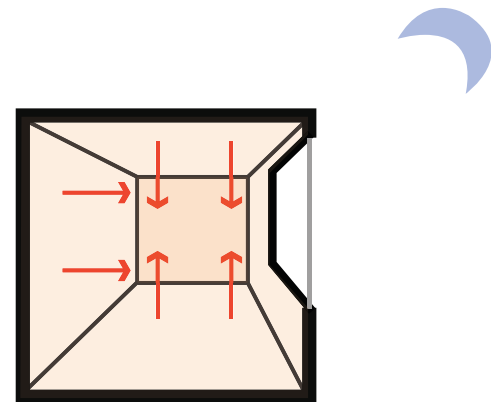


Fig. 4-14. Direct gain - thermal mass wall.
www.passivesolar.sustainablesources.com

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"In an indirect gain system, a thermal mass wall (colored dark on the exterior) is located between the sun and the living space." The thermal mass wall absorbs the sunlight that strikes it and transfers it to the living space by the process of conduction." (<http://passivesolar.sustainablesources.com/>)

Vents can be placed at the top and bottom of the sun-facing wall (fig. 4-15), which will help to regulate when heat affects the living space. At night, the vents should be closed (fig. 4-16) to allow the heat stored in the thermal mass wall to radiate heat. Indirect systems will utilize 30 - 45% of the sun's energy.

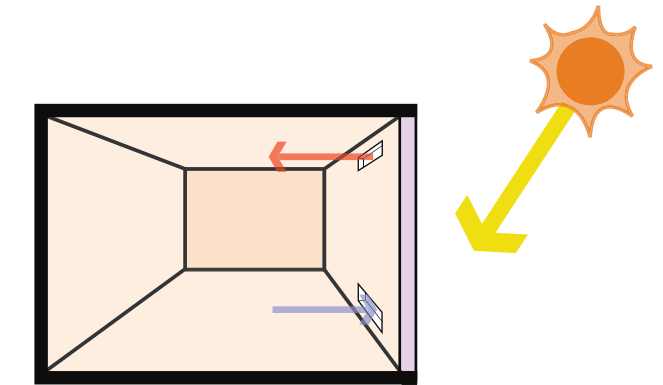
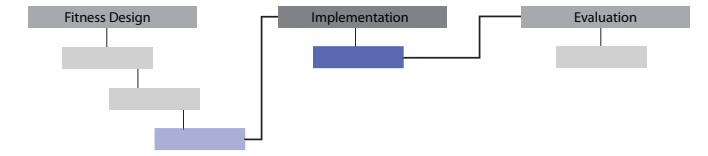


Fig. 4-15. Indirect gain - vent placement.
www.passivesolar.sustainablesources.com

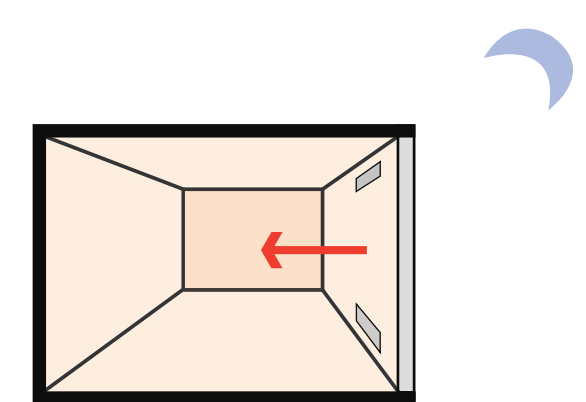


Fig. 4-16. Indirect gain - thermal wall process.
www.passivesolar.sustainablesources.com

Passive Solar Heating (cont.)

“An isolated gain system has its integral parts separate from the main living area of a house. The ability to isolate the system from the primary living areas is the point of distinction for this type of system.” (<http://passivesolar.sustainablesources.com/>) Sunrooms can be placed on the sun-facing side of the primary living space. These rooms allow for sunlight to emit heat, as in a direct gain, while the interior wall of the living space can store heat through the thermal mass wall, and release it at night, demonstrated through fig. 4-17. More specifically, “sunlight is brought into the house by means of conduction through a shared mass wall in the rear of the sunroom, or by vents that permit the air between the sunroom and living space to be exchanged by convection (fig. 4-18). The isolated gain system will utilize 15 - 30% of the natural sunlight.”

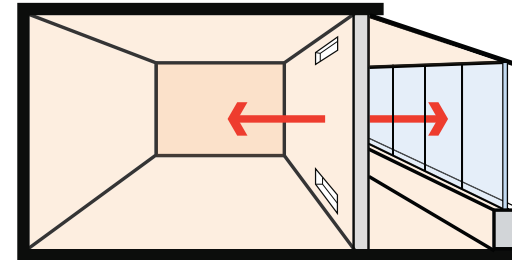
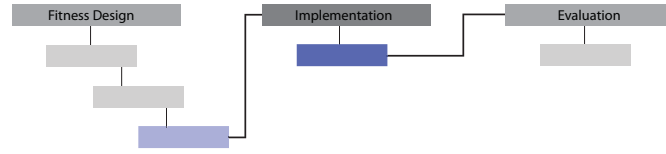


Fig. 4-17. Isolated gain - Thermal wall radiating heat at night. www.passivesolar.sustainablesources.com

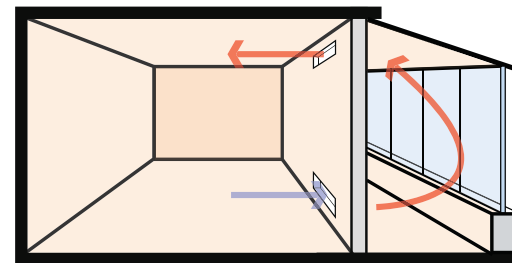


Fig. 4-18. Isolated gain - process of convection. www.passivesolar.sustainablesources.com

Passive Solar Cooling

“A primary strategy for cooling buildings without mechanical assistance (passive cooling) in hot humid climates is to employ natural ventilation. A thermal chimney is a common design element in passive solar designs. Thermal chimneys are based on basic thermodynamics commonly used in passive design. A thermal chimney employs convective currents to draw air out of a building. By creating a warm or hot zone with an exterior exhaust outlet (fig. 4-19), air can be drawn into the house ventilating the structure.” (<http://passivesolar.sustainablesources.com/>)

As seen in fig. 4-20, the air moving throughout the living spaces can be released through an open vent at the bottom of the wall into the attached sunroom. A rule of thumb to ensure a passive cooling occurs is to close the upper vents from the sunroom to the living spaces in order to create a system in which cool air passes through the space and exits on the sunroom vent (<http://passivesolar.sustainablesources.com/>). Utilizing the notion of thermal chimneys is a sustainable way to create natural cooling in tropical locales.

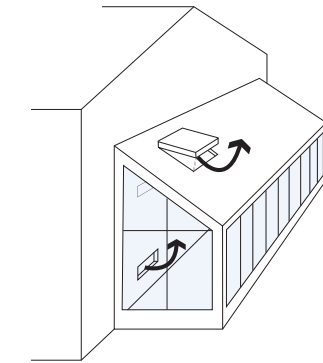
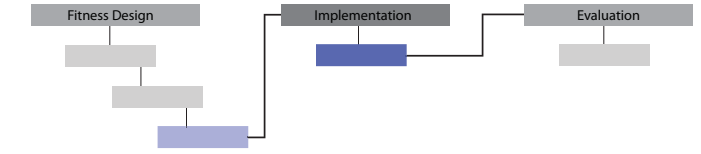


Fig. 4-19. Natural ventilation - exterior exhaust outlet. <http://passivesolar.sustainablesources.com/>

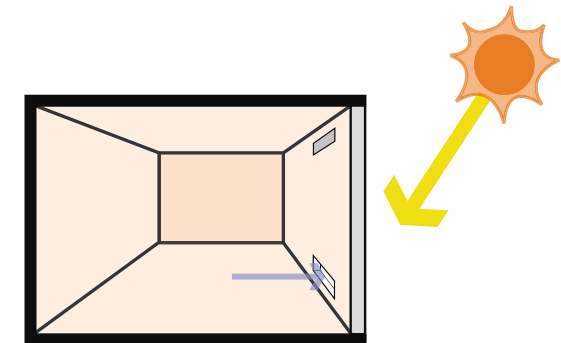


Fig. 4-20. Natural ventilation - cool air released from vent. www.passivesolar.sustainablesources.com

Energy

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Ecodge Usage of Solar Power

This criterion consideration illustrates an ecodge in which solar power has been implemented to power various ecodge components in a sustainable way. Black Sheep Inn faced a dilemma when thinking about how their pond could provide water for different ecodge components. As seen in fig. 4-21, a solar powered pump distributes water from an on-site pond to various ecodge uses, when there is ample sunlight. A part of their solution included installing a solar water pump. "Two 85-watt solar panels directly power a ShurFlo submersible pump with no batteries." (<http://blacksheepinn.com/ecological/conservation.php>) When the sun is out, the pump moves pond water up a large hill, in plastic tubing, where it is then stored in a storage tank. The tank is then able to store water that is needed for their organic gardens. The flotation device uses five to nine gallon plastic jugs that were recycled to keep the raft afloat. The wiring of the pump was designed to power off the pump if there is not enough sunlight. Black Sheep Inn has created a sustainable method in which they can provide water for their gardens from an existing body of water. Implementing such projects can be costly, but budgeting money to create sustainable methods, such as this one, allow for a more "fit" design.

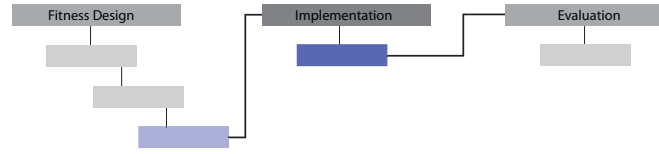


Fig. 4-21. Black Sheep Inn's solar powered pump installed. www.blacksheepinn.com

Capture and Reuse of Water

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Composting Toilets

Black Sheep Inn has designed composting toilets that are placed throughout the ecodge rooms as seen in fig. 4-22. Composting toilets work similar to traditional toilets minus the presence of water. Composting toilets are common to some individuals while foreign to others. Black Sheep Inn states, "In order to bridge the gap between two very distinct norms, we built composting toilets that are attractive, educational and productive." (<http://blacksheepinn.com/ecological/conservation.php>) The composting toilets located at the ecodge do not flush with water, but instead are flushed with "dry stuff" which is made up of dry organic matter such as sawdust and dry chopped leaves (<http://blacksheepinn.com/ecological/conservation.php>). All of the human waste that is generated from the composting toilets is converted into healthy topsoil. Methods such as composting toilets are alternatives for ecodges to implement and help sustain the lodge and the environment.

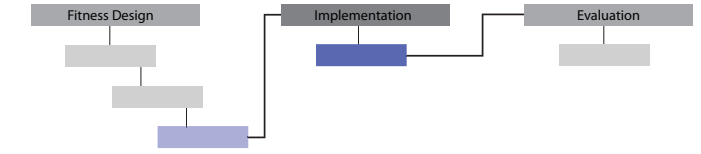


Fig. 4-22. Black Sheep Inn's composting toilets. www.blacksheepinn.com

Capture and Reuse of Water

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Terracing

Terracing the landscape is a common way to control erosion and slow water flow across a surface to create more effective soil penetration. Terracing flat fields or areas has been implemented throughout developments all across the world. The notion of terracing (fig. 4-23) moves water through a slightly sloped terrain (5% slope), back down a steeper slope where the process repeats itself. The graphic portrayal is a hypothetical situation in which water now has different flow speeds, verses one on flat terrains. The implementation of tree planting on the slightly sloped surface has been applied in ecolodges that strive to create biodiversity and those

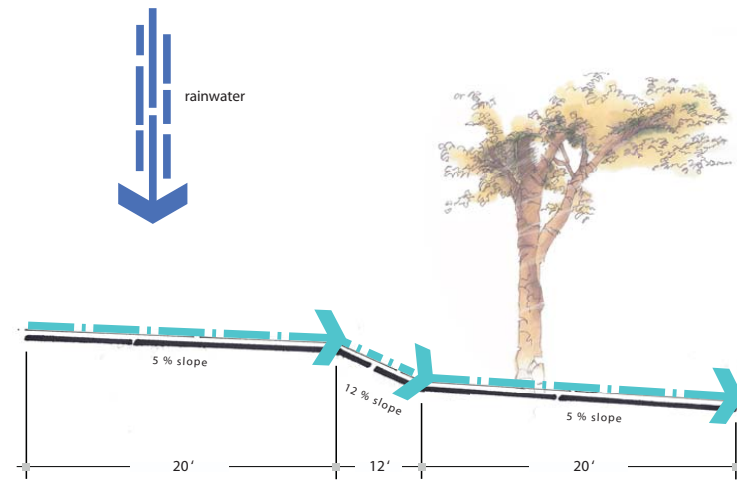
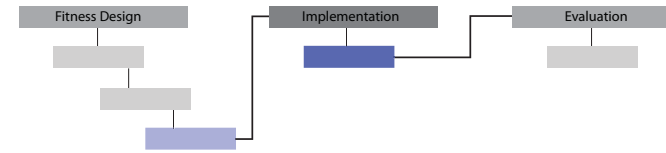


Fig. 4-23. The hydrologic process occurring within a terraced landscape. Generated by Andrew Glenski



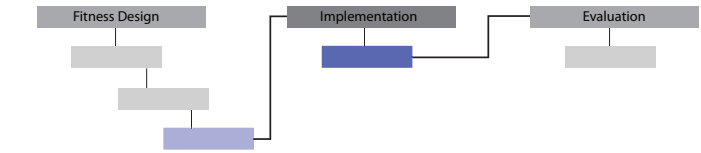
which practice conservation methods. Implementing terraced terrains will have to be evaluated on an ecolodge-to-ecolodge basis. If existing sites don't propose such scenarios, other sustainable practices can occur.

Construction Methods

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Utilizing Natural Materials

Construction methods must be planned and executed properly if they are to be considered sustainable. The considerations for the construction methods criteria will specifically discuss construction materials that are often used by ecolodge development. The following figures accompanied in this section portray various construction material that has been previously implemented in ecolodges. As mentioned previously in this manual, the utilization of natural vegetation can serve as great construction material. Ecolodges in coastal settings can often provide such vegetation from debris after a tropical storm. If this is



the case, the material should be gathered and compiled in a common place (fig. 4-24).

The use of bamboo has been an effective construction material choice by many developments. Other examples of construction materials include "thatch and leaf used in roofs to cool the building; coral stones used to build foundations and walls; timber poles serving as structural members; locally produced timber used for doors and windows; and mud rammed to make walls and floors." (Mehta 2002, p. 85)



Fig. 4-24. Compiled construction materials (bamboo) during the construction process. Courtesy of EDSA

Construction Methods

Utilizing Natural Materials (cont.)

Thatched roofs are often implemented in tropical ecolodges (Fig. 4-25 - fig. 4-26) because of the presence of palm thatch usually found on-site. Incorporating thatched roofs among ecolodge buildings will create an aesthetic that could be common to the area (assuming surrounding communities utilize thatched roofs). The intention of using natural material that can either be found on site or can be easily acquired ensures sustainable measures are being taken while constructing the development (fig. 4-27).



Fig. 4-25. Construction method of thatched roof. www.laparios.com



Fig. 4-26. Completed thatched roof construction. www.kapawi.com



Fig. 4-27. EDSA's final constructed bamboo bridge proving beautiful natural aesthetics. Courtesy of EDSA

Permaculture

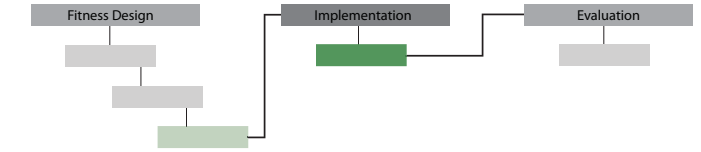
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Common Practices

Across many ecolodges found throughout the world is the inclusion of one or multiple organic gardens. The following figures portray the character of various permaculture practices. The implementation of greenhouses can sometimes be found within an ecolodge development. Greenhouses enable a lodge to house various vegetation types that can later be re-used throughout the ecolodge (fig. 4-28). Before a greenhouse is constructed, proper planning should occur to determine the specific uses of the greenhouse. For instance, Black Sheep Inn has designed a greenhouse that serves various purposes, including



Fig. 4-28. Inside of greenhouse found at Black Sheep Inn. www.blacksheepinn.com



producing warm weather vegetables (fig. 4-29). “The greenhouse is heated by passive solar using 150 gallons of water along with thick adobe walls for thermal mass. Another use of the greenhouse is to house chickens that provide food for the ecolodge. A common practice amongst ecolodges is designing organic gardens for the site. Creating organic gardens allow for food to be readily available in a sustainable way. The implementation of an organic garden should be considered by any ecolodge, since food is produced on site and can be carried to the ecolodge restaurant.



Fig. 4-29. Warm weather vegetables grown in greenhouse at Black Sheep Inn. www.blacksheepinn.com

Soft and Hard Adventure

Common Activities

Activities are an essential component of any ecolodge development because of the experience that is bestowed to the guests (fig. 4-30). An ecolodge should create activities, with both high physical effort and little physical effort, in order to ensure guests have options in what they choose to do on a daily basis. Since the possible activities are quite broad and differ from region to region, the figures included are intended to communicate common activities provided by tropical ecolodges. From a design standpoint, ecolodges should generate a list of activities that are highly desired to include within the development. Taking proper steps in



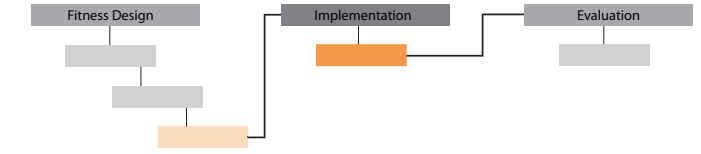
Fig. 4-30. Observation tower designed to expose guests to the environment and weather qualities. Courtesy of EDSA

planning activities for the site allows for more effective design decisions. For instance, if bike or nature trails (fig. 4-31) are intended for the development, a designer should be knowledgeable of pre-established paths. Utilizing existing pathways ensures minimal disturbance is brought to the existing environment.

Many ecolodges that are within large bird communities allow guests to bird watch (fig. 4-32). One way in which proper planning could occur for such an activity would be to design or allocate spaces from which guests can observe. Planning spaces for guests



Fig. 4-31. Natural trail implemented for horseback riding. www.flickr.com



to observe the wildlife ensures guests will stay confined to pre-established space and will minimally disturb the environment. Another way the ecolodge can plan for activities to be effective to their guests would be to create maps or provide guides for specific activities. Helping orient a guest for any activity will allow for a more effective experience.



Fig. 4-32. Bird watching amenity provided at Chaa Creek. www.flickr.com

Site Qualities

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Ecology Aesthetics

The aesthetics of an ecolodge development are intended to be a representation of local architectural styles and incorporate local landscape elements. Within the presence of any ecolodge architectural style, common considerations should occur, including context and aesthetics, energy use and conservation, water conservation and management, waste management and building technologies, materials and construction. (Mehta 2002, p.57) The following figures show such qualities within architectural design of tropical ecolodges. For example, Ranweli Holiday Village uses a blend of western and local styles within each ecolodge building, seen in fig. 4-33. If specific styles are to be incorporated, proper planning must occur to ensure ecolodge buildings can incorporate the intended styles.

Landscape elements (water features (fig. 4-34), planting beds, paving and exterior spaces), much like architectural styles, should be properly analyzed. For instance, if a series of planting beds are instituted within an ecolodge development, proper planning should occur to determine where to acquire native vegetation. Poor planning may result in foreign species being introduced, or it may even be suggested that the planting components should be removed from the design.



Fig. 4-33. Architectural style represented at Lapa Rios. www.laparios.com

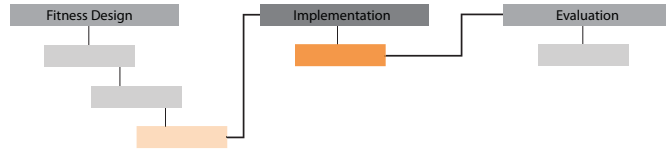


Fig. 4-34. EDSA's design of a water feature used to communicate the local cultural aesthetics. Courtesy of EDSA

Sleeping Accommodations

Room Aesthetics

The following figures show ecolodge sleeping accommodations. The first ecolodge shown is Lapa Rios, which is located in Costa Rica, while the other ecolodge is Kapawi Ecolodge and Reserve, located in Ecuador. At Lapa Rios, “an infinite feeling of freedom lingers in the bungalow’s air, while fresh rain forest breezes race in through awesome screened windows (fig. 4-35), forming flawless paints of the Pacific Ocean.” (<http://laparios.com/lodge.html>) As seen in fig. 4-36, the lodge has implemented warm wooden floors, soft nets over beds, classic bamboo furnishings, private wooden deck, and secluded garden showers (<http://laparios.com/lodge.html>). For a designer, creating sleeping accommodations, such as those found at Lapa Rios, takes a great deal of planning, architectural studies and attention to detail.

“The founding vision of Kapawi Ecolodge and Reserve is to create — in one of the most remote environments in the world — a haven of ease, good taste, and understated luxury.” (<http://kapawi.com/en/the-ecolodge/accommodations.html>) The rooms utilize thatched roofs, screened-in sleeping area (fig. 4-37), balcony with hammock for relaxation (fig. 4-38), private



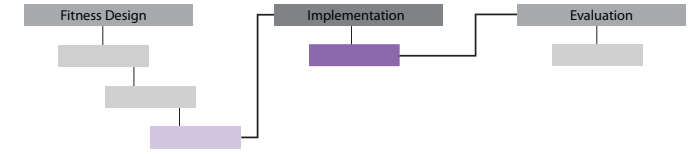
Fig. 4-35. Room designed for relaxation and inspiring views at Lapa Rios. www.laparios.com



Fig. 4-36. Room aesthetics at Lapa Rios. www.laparios.com



Fig. 3-37. Room aesthetics at Kapawi Ecolodge and Reserve. www.kapawi.com



bath with solar heated water and a raised boardwalk connects all the cabins, which all rest on stilts on the edge of a lagoon (<http://kapawi.com/en/the-ecolodge/accommodations.html>).”



Fig. 3-38. Kapawi’s institution of balcony with hammock. www.kapawi.com

Luxury Accommodations

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Luxury Aesthetics

The following figures show luxury accommodations throughout selected tropical ecolodges. The following ecolodges were chosen for graphic portrayal: Black Sheep Inn and Kapawi Ecolodge and Reserve. A common ecolodge component amongst many developments is the inclusion of yoga/spa/wellness center. For example fig. 4-39, shows Black Sheep Inn's yoga facility, "a bright, open space with hardwood floors and plenty of windows for natural light." (<http://blacksheepinn.com/activities/activities.php#yoga>) Along with the yoga facility is an outdoor space intended for outdoor classes with inspirational and tranquil views, which are portrayed through fig. 4-40. Kapawi includes a library at their ecolodge which provides a chance for education along with relaxation (fig. 4-41).

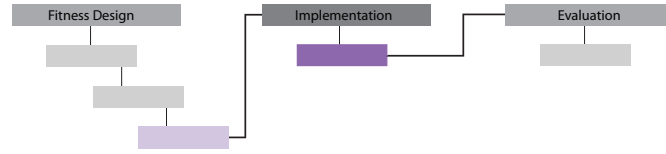


Fig. 4-39. Inside of the yoga space located at the ecolodge. www.blacksheepinn.com

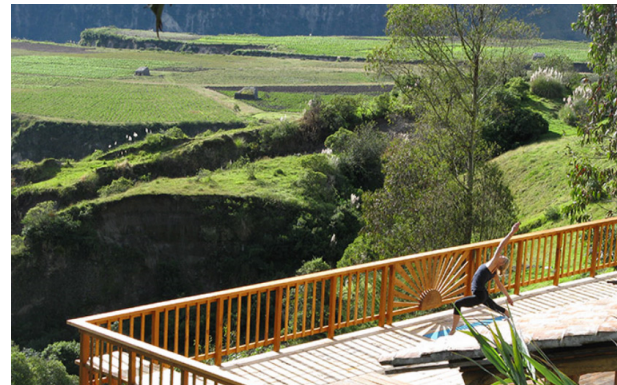


Fig. 4-40. Outdoor space used to inspire classes with distant views. www.blacksheepinn.com



Fig. 4-41. Library space at Kapawi designed for relaxation and education on various topics. www.kapawi.com

Restaurant

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Restaurant Aesthetics

The final design criterion that is visually portrayed is the restaurant. A restaurant should strive to create a unique experience for guests and local people to enjoy. The following ecolodges are examples of restaurant atmospheres (fig. 4-42 and fig. 4-43) found across different ecolodges. Fig. 4-44, exemplifies an outstanding integration of a restaurant that integrates additional activities. The atmosphere of a restaurant, if properly planned, can be designed to create interest and harmony while dining.



Fig. 4-42. Intimate dinner setting at Kapawi. www.kapawi.com



Fig. 4-43. Culinary chef hard at work to create local cuisine for guests. www.kapawi.com

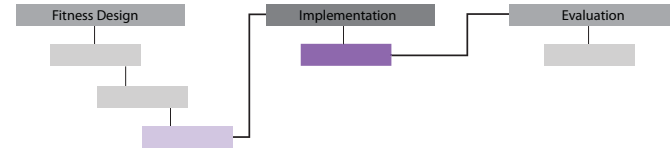


Fig. 4-44. Spiral staircase leading up to an observation tower at Lapa Rios. www.laparrios.com



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Intent

The intent of the evaluation section is to address considerations which an ecolodge should be aware of in order to effectively conduct an evaluation of the proposed ecolodge development, in relation to the biophysical and cultural qualities found on site. For each fitness design principle, there will be an evaluation summary based on what qualities should be monitored, where the development should be in terms of developing projects or practices and what should be considered for the future. It is important for ecolodges to follow up after the initial design and construction phase(s) are completed.

During evaluation, the ecolodge should establish a plan of attack for the monitoring of natural and cultural aspects. "The basic concept of monitoring is to measure conditions over time and to identify and predict change or impact (both positive and negative). The final application of monitoring is to use it to make more informed decisions." (Mehta 2002, p. 159) To ensure fitness design is achieved the natural and cultural aspects on site must be sustained through time, which will determine the success of the ecolodge development.

Additional to the written excerpts for each principle are a series of follow-up questions that are intended to help the ecolodge designers, developers, operators and owners generate questions based on factors present

within each principle. The questions are not intended to cover every topic discussed within the evaluation of each selected principle, but instead are to help create a basis by which a reader can further develop questions for a specific project and site context.

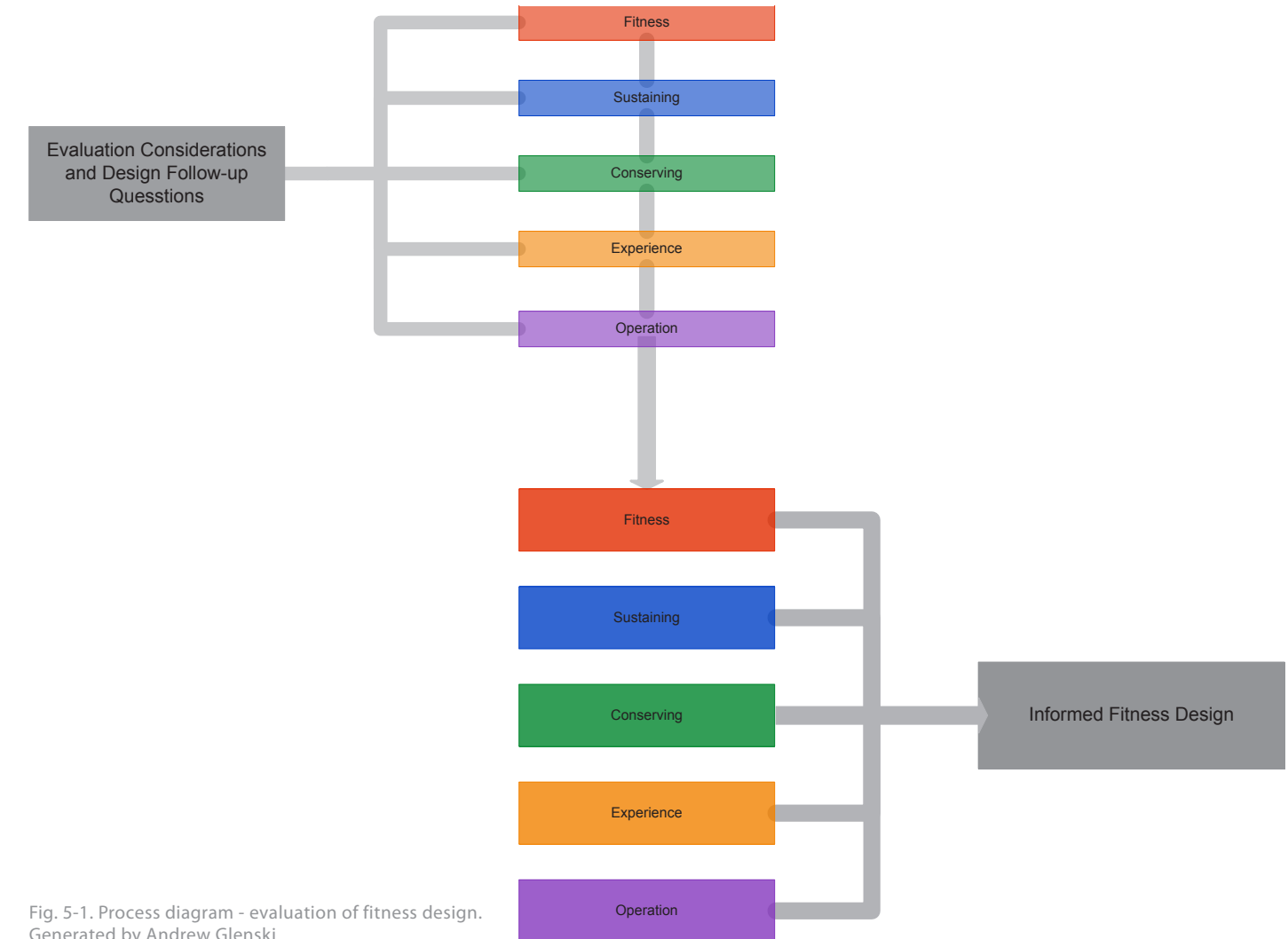


Fig. 5-1. Process diagram - evaluation of fitness design. Generated by Andrew Glenski

Fitness

The primary goal that should be evaluated, first and foremost, is whether or not the final design, including all construction phases, achieves what the site planning, site inventory and analysis and site design set out to accomplish. This includes evaluating how the ecolodge was constructed, specifically identifying any shortcuts that may have occurred, whether each ecolodge building serves the purpose that was originally intended and whether the indigenous communities needs and concerns are addressed and resolved (in a design context).

If proper planning occurred before the construction phase, there should not be any major problems with infrastructure, building dimensions or exterior spaces. It is the obligation of the designer and other associated parties (contractors, developers and owners) that are a part of overseeing the construction, to regularly partake in site visits and continually assure that every ecolodge program component is constructed successfully. Once the development is fully constructed, regular visits to the ecolodge (weekly, monthly or yearly) should be scheduled. This occurs so the ecolodge can be evaluated on whether or not it is accomplishing its goals and whether those goals are being portrayed through various ecolodge components.

Ecolodge building uses should be determined prior to construction. During the evaluation of an ecolodge,

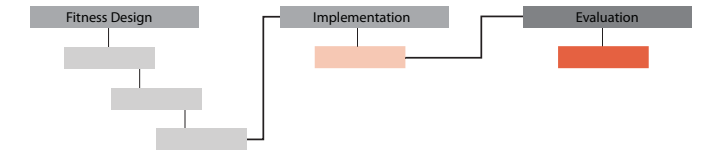
it is important to determine whether all the proposed ecolodge components continue to be used to their full potential. An example of this could include determining whether the sleeping accommodations are meeting the needs of the ecolodge guests. An ecolodge operator should analyze how the spaces within the rooms are utilized to assure the intended uses are occurring. Understanding whether the sleeping accommodations are achieving their intended purpose could later assist design decisions if more rooms are to be later added.

The indigenous populations have the right to voice their concerns and it is the responsibility of the ecolodge operators to address and resolve these concerns. If indigenous communities have complaints about ecolodge components, whether they impede on their community or disrupt any connections that a person may have had prior to the site being developed, it may be an indication that the site preparation steps were not completed thoroughly. If such problems exist, the ecolodge operators must address the problem immediately. Some indicators that could be used by ecolodges to monitor the condition of the social environment include:

1. Local resident access to facilities (such as parking) and services (such as tradesmen)

2. Sense of privacy among local residents
3. Availability and price of food
4. Community support for the scale and nature of the ecolodge
5. Ongoing visitation to local recreation areas by local residents (Mehta 2002, p. 164)

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Fitness Follow Up Questions

1. Have any problems developed dealing with the infrastructure of any ecolodge components?
2. Are any existing viewsheds from local communities disrupted because of the ecolodge development.
3. Are any ecolodge components not being utilized by the guests or local communities? If so, is it necessary to continue the intended use, or can the component be retrofitted to serve a new purpose?
4. If new or additional ecolodge components are needed have proper steps been taken to plan for such changes? Are they being conducted in a similar fashion to the original ecolodge design?
5. Are there any risks to users of ecolodge components that were not accounted for in the design process? What changes can be made to fix such issues?

Sustaining

When evaluating the sustainability of an ecolodge design, a designer should continuously monitor the environment. The involved ecosystems, within each environment, are of utmost importance and must be sustained to achieve a fit design. Monitoring the environmental performance will identify where issues lie and establish where environments have been sustained. If problems exist with the characteristics of the environment, there are typically three alternatives to revive the environment. They are:

1. Making a substantial investment in rehabilitation and associated activities
2. Changing the marketing to attract tourists that are less discerning and even more impacting
3. Closing down the operation and losing part or all of the business

(Mehta 2002, p.161)

The monitored data needs to be able to determine whether the condition of the environment changed because of the ecolodge and its visitors, or some other influence. (Mehta 2002, p. 161) Understanding the cause of the issue will guide operators to the most direct solution.

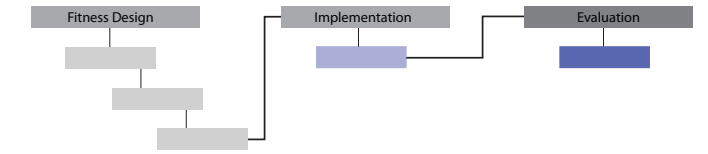
One effective way to evaluate the environment over a long period of time is to take photos. It could be determined that if a sensitive ecosystem is present on site, then photos should be taken biweekly to have an accurate portrayal of the effects caused by the ecolodge, by the end of the year. An example of this could be taking pictures of an habitat area where guests are likely to interact. "These photos need to be taken in precisely the same place and should be supplemented with notes about the conditions at the time, so it may be useful to set up discreet, permanent photo-points and mark them as such." (Mehta 2002, p. 162) Once the photos are analyzed, the ecosystem, in the selected area, should be evaluated to determine if it has been sustained or degradation has occurred. It is important to note whether the impacts were likely cause by human interaction, or whether the environment has experienced a change in the ecosystem processes.

Another method that could be implemented, is by conducting routine observations by staff members or specialists. Data can be collected in field notes, which then can be entered into a database. (Mehta 2002, p. 162) It is important that if observation measures are taken, there must be a predetermined schedule for when such visits should be conducted, as well as what places are important to monitor. One area could be located where development and human impacts are likely, while another could be in a similar habitat though

distant from any major ecolodge activities. (Mehta 2002, p. 162) Monitoring similar habitats in different environments can provide the ecolodge with evidence as to what is causing ecosystem degradation, if any is occurring.

If sustaining ecosystems is not effectively being accomplished, a look at the practices implemented at the ecolodge should be evaluated. Sustainable practices must maintain healthy environments. The ecological processes must be studied in greater detail to find their underlying issues. It is advised to bring in biological and environmental specialists to aid in the identification of issues found within specific habitats.

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Sustaining Follow Up Questions

1. Are factors of best management and sustainable practices (specifically energy, water, food and recycling) being utilized to their potential? Are there improvements that can be immediately implemented? If not, are there projects that can be undertaken to raise awareness or money?
2. Have there been any purchasing policy standards drafted?
3. How have guests and employees been educated on sustainable practices? Have there been any standards generated to regulate the human interaction with sensitive ecosystems?

Conserving

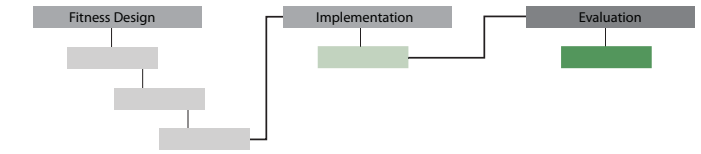
The most important aspect to evaluate for conserving natural ecosystems is whether the environment has either been sustained or degraded. If the environment has been sustained or improved since the implementation of the ecolodge, the goals set by the designer, developer, operators and owner have been achieved. If the environment has been degraded or shows areas of disturbance, then an evaluation of the conservation practices and projects must occur. For any conservation method, the goal should be to conserve the landscape and promote biodiversity within.

“All too often the most devoted ecolodge managers are faced with losing clientele after a few years because the biodiversity and quality of the natural environment has slowly been degraded by what appeared to be harmless activities.” (Mehta 2002, p. 161) Conservation measures (projects and practices) are intended to address the environment as a living entity in which the ecolodge must ensure its health and productivity. If measures have been taken to create conservation within the development, a return to the goals of the conservation project should be conducted by all parties who oversee the developments progress. While looking at the conservation goals, one should note what is being achieved and what is not. For example, if the ecolodge has made efforts to educate guests on conservation projects and practices, one should analyze how that is being achieved. They should specifically

identify how specific goals are not being met. For instance, if there are no attempts to educate guests on the local biota and their processes, ecolodge operators should create informational signs, hire qualified staff who are capable of educating guests or develop a series of presentations intended to expose guests not only to the local environment, but how each guest can help to conserve the environment. Taking such measures to inform guests will increase the sustainability of the ecolodge as a development.

If conservation projects and practices are being implemented, but are not effective, a phasing plan could help restore the programs or establish new ones. The idea of a phasing plan, in relation to conservation projects and practices, is to set goals that involve creating new conservation methods. For instance, if the ecolodge is not effectively contributing to community sponsored projects, then a program can be designed to organize groups (operator, employees and guests) to donate time every week to assist in community projects. Another way that could help improve community based projects would be to set up a fund that could be given to the communities to help fund their conservation projects. It is the responsibility of the ecolodge staff and operators to expose guests to such projects, in order to promote local community projects.

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Conserving Follow Up Questions

1. Are there any signs of erosion?
2. Have local communities expressed gratitude for ecolodge participation in community sponsored projects? Are there any considerations from the community such as greater participation or project structuring questions that the ecolodge can resolve?
3. Are there programs on site that show actual examples of how biodiversity has increased? Can these be applied to other areas on site?
4. If new conservation projects are desired what steps have been taken to assure these are successful? Is there a schedule with a set date when the conservation project can begin?
5. Are there signs of increased biodiversity?
6. Are guests given educational opportunities to increase their knowledge on the local conservation projects?
7. Are guests told to avoid sensitive areas on site? How is this enforced?

Experience

When evaluating the experience of an ecolodge, a designer must recognize how all involved parties (guests, local communities and management personnel) of the ecolodge feel about the development. It should be determined by the ecolodge operators whether or not the ecolodge fulfills the guests and local communities needs. The experience of the ecolodge should be evaluated by both educational and environmental experiences. It should be determined whether or not amenities provided by the ecolodge achieve the creation of positive experience for both guests and indigenous populations. The ecolodge operators should generate a list of all physical activities and amenities that are included with the development to determine whether there should be planning for future activities to take place at the ecolodge.

Determining the effectiveness of experiences bestowed to the ecolodge guest can be evaluated by simply asking for feedback from guests after their stay. For instance, a questionnaire could be generated with a list of questions asking guests input on the various activities they took part in. A questionnaire could be divided into environmental and educational experiences, so that the guests can voice their opinions about their experiences and give suggestions to other activities in which they would have liked to take part. Upon analyzing the feedback from guests, the ecolodge

operators can identify where future improvements can be made.

The following indicators assist the ecolodge when determining the condition of the social environment.

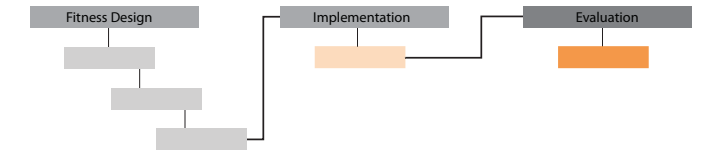
1. Opportunities for local input into ecotourism-related decision making
2. Opportunities for constructive dialogue between local communities and guests
(Mehta 2002, p. 164)

Upon evaluating the indigenous community's experience of the ecolodge, an effective way to gain insight on community viewpoints can be to conduct local town meetings. The meetings provide the local people a chance to address any concerns or compliments that involve the ecolodge. Ecolodge operators should consider any topic of discussion and strive to address any concerns from the indigenous communities. To ensure a healthy relationship is maintained between the ecolodge and local communities, taking measures such as town meetings are needed.

Once all input is received from guests and indigenous populations, ecolodge operators should

evaluate if the development will need to expand the activities and amenities offered at the ecolodge. A future development plan should be implemented if it is determined the ecolodge must incorporate a greater diversity of experiences and accommodations. A future development plan ensures appropriate components (amenities and activities) are properly planned and funds can be gathered to assist in designing such components.

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Experience Follow Up Questions

1. What activities on-site generate the most interest from guests? Are there any reasons, other than the activity itself, that create such interest (i.e. unique landscapes, endangered flora or fauna, viewsheds)?
2. How can a local person experience the site? Are they given the same opportunities as guests staying at the ecolodge?
3. If community meetings are commonly conducted, is there a good amount of community participation? Do these communities feel comfortable voicing their opinion on various topics?
4. How can each ecolodge component provide a unique experience while still bestowing education of the cultures customs and practices and environmental stewardship?

Operations

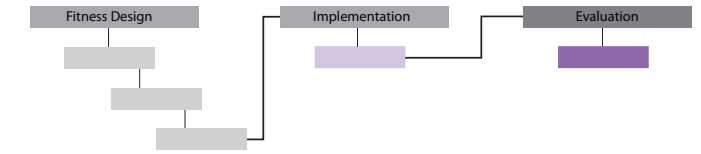
The major aspects to evaluate in terms of 'operations' is the education of ecolodge management personnel, interaction between ecolodge management personnel, guests and local communities and the daily operations that occur at the ecolodge. These aspects determine the overall effectiveness of ecolodge management personnel and the efficiency of the ecolodge. Each aspect should be given similar importance, for if one aspect is lacking, it will likely affect the operations of the entire ecolodge.

The education and benefits given to employees should be evaluated periodically throughout the year to ensure capable employees are hired at the ecolodge. Ecolodge operators should determine whether the educational programs given to staff members are creating more informed employees in terms of communication to foreign guests, an understanding of the ecolodge's sustainable and conservation projects and a healthy relationship with the local communities. If staff members are lacking in certain areas, the educational programs should be evaluated to determine their effectiveness. If the programs are lacking in substance or communication, the programs should be restructured.

The daily operations that occur at the ecolodge must be evaluated to determine their effectiveness. These operations include customer satisfaction, ability to tend

to guests concerns and needs and retaining a healthy upkeep of all ecolodge facilities. If any operation is constantly lacking, the ecolodge management personnel must recognize where the problem lies and quickly address it. Creating a unique experience for the guest will likely yield a positive response from the guest when discussing time spent at the ecolodge.

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Operation Follow Up Questions

1. How have guests reacted to the ecolodge staff? Are there any language or cultural barriers that are creating issues? How can these be addressed?
2. Are ecolodge staff members given the chance to choose an itinerary for what educational programs they will attend? What is the breath of the topics presented to the ecolodge staff?
3. What is the relationship like between the local communities and the ecolodge management personnel?
4. Are guests given benefits to local attractions or sites? If not, what is the reason why benefits can't be implemented?
5. Do guests respond positively to the cultural experience they are exposed to at the ecolodge?

Final Project Conclusions

The manual presented is the culmination of nine months of work researching specific topics, which entail how to effectively design an ecolodge in order to accomplish fitness design. Presented within this manual is an in depth study of tropical locales and their associated characteristics (soils, climate and vegetation), the specific products (design principles, guidelines and criteria) that comprise an ecolodge development, ways in which selected ecolodge design components have been applied previously to ecolodges and determining how a designer or ecolodge operator would conduct a thorough evaluation of their ecolodge development. An additional understanding of the relationship between the ecolodge and the indigenous populations and local environmental qualities was analyzed to ensure they are included and sustained once an ecolodge development is implemented. All of these elements provide an informed process which guides a designer through design decisions and strategies for an ecolodge development.

Throughout the process of designing the manual, literary sources were integrated to give validity to the statements and arguments presented. These literary sources specifically assisted in developing in depth considerations, which are to be applied in the design of an ecolodge. The fitness design chapter and its counterparts (implementation and evaluation) heavily integrated literature to ensure all suggestions that

were communicated to the designer were informed. I personally feel the use of literature contributed to the manual's substance and validity. A precedent study of six specific ecolodges, located in tropical locales, was conducted to gain insight on how previous design issues were dealt with in an effective way. These ecolodge studies help to formulate the specific components of fitness design (design principles, guidelines and criteria) found within this manual. I know that without utilizing the selected literature or without the presence of precedent studies, the manual would not communicate a holistic approach to designing an ecolodge.

Although the manual is geared to address specific design issues common among tropical ecolodges, fitness design can be applied to ecolodges in temperate contexts, as long as the specific principles and its components found within the manual are adhered to. I have concluded that the principles should be relevant to any designer's mindset. Additionally, I have concluded that the addition of descriptive guidelines and criteria helped to outline what actual applications and considerations should be applied by designers. All of the products of fitness design were essential to involve in the process of designing the manual to ensure a designer can take initial design ideas and carry them through the actual construction of an ecolodge.

Throughout the evolution of the design manual an array of design ideas were presented to establish a thorough and informed end product. The manual first began with the notion of creating a document that could assist a designer in the development of an ecolodge, through the use of a design framework. As the project continued to take new form, other strategies, such as communicating ways in which ecolodges have been previously designed, began to fit within the document. The final chapters found in the manual are the culmination of ideas that were continuously being reworked and shaped to create a more cohesive document. I have concluded that having the ability to take an idea and continue to refine its individual components is essential to any design problem. In the case of this manual, each chapter has been reworked several times which includes generating terms to convey design ideas, critically thinking about how design elements can fit into each chapter and the manual as a whole and research to enhance the presented design process. The most effective technique I used in this manual, when brainstorming, was to think about how I wanted the manual to be conveyed to its readers. The inclusion of hyperlinks is an example of this. The hyperlinks are intended to give a reader the ability to navigate the document, in a way best suited for their specific use. For instance, if a reader wanted to follow one principle through its evaluation, they had that option. The notion of creating an intended

experience for a user is a thinking process that designers should conduct in any design. The absence of critically determining the intended experience for the reader, in terms of this manual, would result in a lack of efficiency and overall effectiveness.

Overall, I feel that the product presented within this design manual will effectively assist a designer when designing an ecolodge. One aspect that I would have liked to convey is how fitness design can be applied to an existing site. I was unable to obtain a site where a truly informed analysis of both its cultural and ecological aspects could be conducted. Having the chance to communicate how an ecolodge could be designed to achieve fitness design, as I have defined it, would have given designers an example of a "fit" ecolodge. Although an actual site design is not conveyed in this manual, I strongly feel the design principles, guidelines and criteria presented inform a designer, which enables them to create a holistic ecolodge development. As designers we must ensure that our proposed designs, whatever their context, ensure the livelihood of all elements, both social and natural, are sustained through time. In terms of ecolodge design, creating experiences for users that promotes education (culturally and environmentally) and bestows stewardship, through design elements, is essential in achieving fitness design.

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Appendix A | Ecotourism Primer

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Intent

The intent of the ecotourism primer is to inform readers about the theories and principles behind ecotourism. It is intended to expose a reader to an understanding of what comprises true ecotourism and what characteristics are present in developments that do not adhere to the definition of ecotourism.

The primer will begin by defining ecotourism and communicate its principles, defined by Martha Honey (2008), to the reader. A brief history is included to communicate how ecotourism took form in its earlier years and how the industry is shaped today. The last piece associated with defining ecotourism is a discussion on ecotourists, or people that visit ecolodges.

A reader will be exposed to the characteristics of both ecotourism lite and ecotourism proper. These notions are discussed within Martha Honey's book, Ecotourism and Sustainable Development: Who Owns Paradise? The theories posed by Honey allow a reader to be able to easily identify when a development is conforming to ecotourism or is merely using the facade of ecotourism to create marketing schemes. It is important that a reader has an understanding of the roots of ecotourism, if this design manual is to be effective.

The final section in the ecotourism primer is a discussion on the future relevance. This section communicates the goals of the primer. The ecotourism primer's ultimate goals include informing the reader of ecotourism to transition them into the design manual and to communicate the need and reason for an ecolodge design manual. Once these goals are met, a reader can more effectively navigate through and more clearly understand the manual.

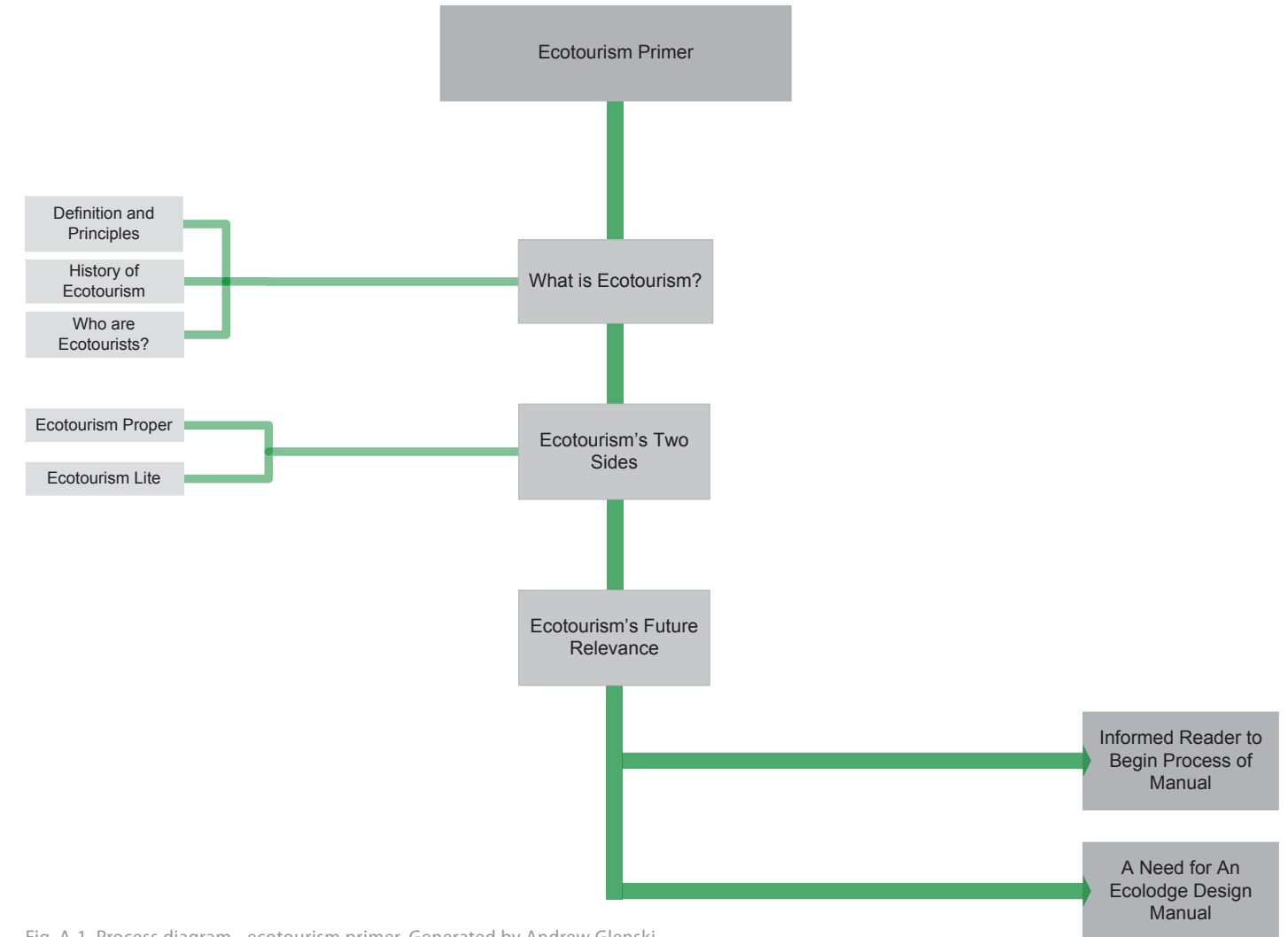


Fig. A-1. Process diagram - ecotourism primer. Generated by Andrew Glenski

What is Ecotourism?

Ecotourism Definition and Principles

Ecotourism is commonly defined as “responsible travel to natural areas that conserves the environment and improves the well-being of local people.” (Honey 2008, p. 7) Ecotourism marks a small tourism sector that is devoted to creating developments that help promote local communities and environments that are a part of the proposed development. Ecotourism is a growing niche market within the larger travel industry, with the potential of being an important sustainable development tool. (Wood 2002, p. 7) Throughout the international tourism chain, entrepreneurs are marketing themselves as being involved in ecotourism. (Honey 2002, p. 71) Using the term ecotourism, in today’s context, is an easy way to create an image which is one of sustainability for both the local communities and environment, whether it is true to the development or not. A distinction must be made between organizations seeking true ecotourism principles and those who use sustainable advertising to attract visitors.

“From a functional viewpoint, ecotourism in the marketplace is mostly individual or small-scale tourism (tour groups up to 25 and hotels with less than 100 beds) that is operated by small and medium-sized companies in natural areas.” (Wood 2002, p. 11) Other forms of tourism and development may be much larger, though often

stray from ecotourism’s underlying principles. A more detailed list of principles helps to identify various aspects that must be considered and achieved to conform to ecotourism. The ecotourism principles that are used for the purpose of this manual are defined by Martha Honey in her book *Ecotourism and Sustainable Development: Who Owns Paradise?*, and are as follows (Honey 2008, pgs. 29-31):

1. “Involves travel to natural destinations. These destinations are often remote areas, whether inhabited or uninhabited, and are usually under some kind of environmental protection at the national, international, communal, or private level.” (Honey 2008, p. 29)
2. “Minimizes impact. Tourism causes damage. Ecotourism strives to minimize the adverse effects of hotels, trails, and other infrastructure by using either recycled or plentifully available local building materials, renewable sources of energy, recycling and safe disposal of waste and garbage, and environmentally and culturally sensitive architectural design. Minimization of impact also requires that the numbers and mode of behavior of tourists be regulated to ensure limited damage to the ecosystem.” (Honey 2008, p. 29)
3. “Builds environmental awareness. Ecotourism means education, for both tourists and residents of nearby communities. Well before the tour begins, tour

operators should supply travelers with reading material about the country, environment, and local people, as well as a code of conduct for both the traveler and the industry itself. This information helps prepare the tourist, as TIES’S guidelines state, “to learn about the places and people to be visited and to minimize their negative impacts while visiting sensitive environments and cultures.” Essential to good ecotourism are well-trained, multilingual naturalists guides with skills in natural and cultural history, environmental interpretation, ethical principles, and effective communication. Ecotourism projects should also help educate members of surrounding communities, schoolchildren, and the broader public in the host country.” (Honey 2008, p. 30)

4. “Provides direct financial benefits for conservation. Ecotourism helps raise funds for environmental protection, research, and education through a variety of mechanisms, including park entrance fees; tour company, hotel, airplane, and airport taxes; and voluntary contributions.” (Honey 2008, p. 30)

5. “Provides financial benefits and empowerment for local people. The local community must be involved with, and receive income and other tangible benefits (potable water, roads, health clinics, etc.) from, the conservation areas and its tourist facilities. Campsites, lodges, guide services, restaurants, and other

concessions should be run by, or in partnership with, communities surrounding national parks or other tourist destinations.” (Honey 2008, p. 30)

6. “Respects local culture. Ecotourism is not only ‘greener’ but also less culturally intrusive and exploitative than conventional tourism. Whereas prostitution, black markets, and drugs often are byproducts of mass tourism, ecotourism strives to be culturally respectful and have a minimal effect on both the natural environment and the human population of a host country. This is not easy, especially since ecotourism often involves travel to remote areas where small and isolated communities have had little experience in interacting with foreigners.” (Honey 2008, p. 31)

7. “Supports human rights and democratic movement. Although tourism often is glibly hailed as a tool for building international understanding and world peace, this does not happen automatically; frequently, in fact, tourism bolsters the economies of repressive and undemocratic states. Mass tourism typically pays scant attention to the political system of the host country or struggles within it, unless civil unrest spills over into attacks on tourists.” (Honey 2008, p. 31)

The outlined principles by Martha Honey (2008) encompass all entities involved within a true ecotourism destination. The indigenous communities are given attention and have a greater likelihood of approving of the development. The local environment, with their associated ecosystems, is given proper attention to ensure the environment can sustain itself with the institution of an ecotourism development. It is important that these principles are followed for any ecotourism development. "Properly defined, then, ecotourism is travel to fragile, pristine and usually protected areas that strive to be low impact and (often) small scale. It helps educate the traveler, provides funds for conservation, directly benefits the economic development and political empowerment of local communities, and fosters respect for different cultures and for human rights." (Honey, 32-33)

History of Ecotourism

Ecotourism was originally rooted in nature tourism, which is defined as travel to pristine places, usually involving forms of physical activity and probably began with the Sierra Club Outing program (Honey 2008, p. 11). The main purpose of their trips, conducted by Sierra Club Outing, was "to take Club members into the Sierra (Nevada) to show them natural wonders to inspire participants to later dedicate their time restoring and preserving the natural features found during the outings." (Honey 2008, p. 11) These outings became more and more popular, once word spread, and the tour sizes increased. "These enormous caravans, which grew to an average of 115 to 125 people, were "anything but 'eco' in terms of their effects on the environment, said Charles Hardy, a director of Sierra Club Outings. (Honey 2008, p. 12) Operators recognized large group sizes were not creating the proper environments for a traveler to experience the Sierra Nevada. The outings "continued until 1972 when growing environmental concern about the human "impact on the fragile High Sierra landscape," led the Sierra Club's Outing Committee to stop conducting the High Trip (name associated with each outing) and shift to smaller trips, usually for twelve to fifteen people. These have featured backpacking, biking, river rafting, and mountain climbing trips to a variety of U.S. locations and, beginning in 1964, overseas." (Honey 2008, p.12)

As true to the intentions of the Sierra Club Outing,

it was the original intent of ecotourism to create destinations in which tourists could view foreign landscapes and environments, thus raising money or attention for conservation projects. "International nature-based businesses began to thrive in the 1980's with the growing interest in outdoor travel and the environment, spurred by excellent new outdoor equipment for camping and hiking, and events such as Earth Day." (Wood 2002, p. 11) Once a base industry was created, business owners began to sponsor local conservation groups in order to raise money to help fund local conservation projects. These business owners quickly learned that employing local people to run their businesses was an excellent way of creating significant benefits for local people. (Wood 2002, p. 12) "Tour operators selling trips to the Galapagos Islands, Costa Rica, Kenya and Nepal were some of the early players in this movement. Some of these companies argue that, in fact, they had already been using ecotourism principles for some 20 to 30 years." (Wood 2002, p. 12)

"With rapid growth of nature-based tourism within the last decade has come the development of numerous lodges in and around biologically rich, diverse areas." (Mehta 2002, p. 5) These lodges take many different forms and titles, much like the terms used to describe ecotourism. For the purpose of this manual, an ecolodge will be the term used to describe developments that are created to encompass the definition and principles of

ecotourism. "An ecolodge is an accommodation facility that satisfies at least five of the criteria listed below, three of which must embody the main principles of ecotourism; that of conservation of neighboring lands, benefits to local communities and interpretation to both local populations and guests:" (Mehta 2002, p. 5)

1. "Helps in the conservation of the surrounding flora and fauna" (Mehta 2002, p. 5)
2. "Endeavors to work together with the local community" (Mehta 2002, p. 5)
3. "Offers interpretive programs to educate both its employers and tourists about the surrounding natural and cultural environments" (Mehta 2002, p. 5)
4. "Uses alternative, sustainable means of water acquisition and reduces water consumption" (Mehta 2002, p. 5)
5. "Provides for careful handling and disposal of solid waste and sewage" (Mehta 2002, p. 5)
6. "Meets its energy needs through passive design and renewable energy sources" (Mehta 2002, p. 5)
7. "Uses traditional building technology and materials wherever possible and combines these with their modern counterparts for greater sustainability" (Mehta 2002, p. 5)
8. "Has minimal impact on the natural

surroundings during construction" (Mehta 2002, p. 5)

9. "Fits into its specific physical and cultural contexts through careful attention to form, landscaping and color, as well as the use of vernacular architecture" (Mehta 2002, p. 5)
10. "Contributes to sustainable local community development through educational programs and research" (Mehta 2002, p. 5)

The history of ecotourism has taken different forms throughout the evolution of the industry including small group outings to ecolodge developments to conservation projects for travelers to experience. Ecotourism was originally formed from more conscientious nature tourism, which has caused many businesses and governments to promote it without an understanding of its most basic principles. (Wood 2002, p. 12) Until Martha Honey included her lists of principles and more detailed definition of ecotourism, the term ecotourism has been vague. "The travel industry typically classifies ecotourism with nature or adventure tourism; ecotourism is frequently referred to as 'responsible,' 'sustainable,' 'green,' or 'low impact' tourism and, by 2000, new terms such as 'pro-poor tourism' and 'geotourism' were complicating the picture and confusing the public." (Honey 2008, p. 12-13) It is important that visitors considering ecotourism destinations and activities, have an informed knowledge

of where ecotourism has rooted from and how to identify true forms of ecotourism. A misinformed visitor may not fully experience what ecotourism sets out to achieve if they are not knowledgeable about what an establishment must possess to adhere to ecotourism's definition and principles.

Who are Ecotourists?

Throughout the entire ecotourism chain there is a overlapping and blurring of the boundaries between nature-based tourism and that of true ecotourism. (Honey 2008, p. 76) Since there is not a uniform definition of what comprises tourists that partake in ecotourism, defining a "ecotourists" is a very difficult task. Though in 2004, both ecotourism and nature-based tourism were estimated to grow, globally, three times faster than the tourism industry as a whole. (Honey 2008, p. 76) "By 2005, it was estimated that about 13 percent of all U.S. outbound leisure travelers could be considered ecotourists." (Honey 2008, p. 76) It still is not completely accurate because of the misinformed boundaries on tourists seeking true ecotourism versus tourists seeking other forms of travel closely related to ecotourism.

Other reasons why there is not a uniform definition of ecotourists, according to Pamela Wight, include: "the limited studies of markets, poor definitional understanding, and the fact that ecotourist markets are not homogeneous. Despite the large body of literature on ecotourism, market studies are limited to destination area markets, to tour operator perceptions, or to more general studies of nature or adventure-based tourists." (Honey 2008, p. 76-77) The difficult task of determining what the market of ecotourists entails will continue if ecotourism is regarded within the larger tourism classifications (nature, culture and adventure).

Nevertheless, experts have conducted research, to better understand the U.S.'s ecotourist demographics, and say that the ecotourists in the United States fit a broad profile. (Honey 2008, p. 77) "Most are between thirty-five and fifty-four years of age, but there are also a considerable number of 'mature' adults (older than fifty-five)." (Honey 2008, p. 77) While they are equally divided by gender, most are physically active with a genuine interest in learning about nature tourism. (Honey 2008, p. 77) Many are from the some 30 million Americans who are a part of environmental organizations, while many others are socially minded and interested in the culture, history and people in developing countries. (Honey 2008, p. 77)

Ecotourists are located throughout the world and are hard to identify because of ecotourism's present state within the tourism industry as a whole. Without the presence of informed methods of determining ecotourist demographics, general classifications exist. For the purpose of this manual, an ecotourist should not be specifically classified by any race, age, gender or educational background. Instead, an ecotourist should possess qualities of: appreciation for fragile or sensitive environments, recognition of local communities with a willingness to help partake in its local customs, practices or projects and, finally, an ecotourist should possess an interest in physical activities, tours and lectures found at the ecolodge itself or off-site locations.

Ecotourism's Two Sides

Ecotourism Proper vs. Ecotourism Lite

A wide range of terms are used to describe ecotourism and there is a lack of a precise definition adopted by all ecotourism developments. Both the numerous terms and lack of definition, coupled with ecotourism's diverse roots and multiple actors, have helped produce what are today two conflicting crosscurrents within the ecotourism industry. (Honey 2008, p. 28) The first notion is referred to genuine ecotourism (ecotourism proper) which are establishments and organizations that put the multiple principles of ecotourism into practice, often in the form a single accommodation, tour company, park, or destination. (Honey 2008, p. 28) The other notion is referred to ecotourism lite which merely adopts the façade of ecotourism without making fundamental changes to mass tourism practices. (Honey 2008, p. 28) It is important that a reader can easily identify whether an "ecotourism" establishment relates more with ecotourism proper or ecotourism lite.

Unfortunately, not nearly enough ecotourism establishments adhere to the notion of ecotourism proper. "Ecotourism demands a more holistic approach to travel, one in which participants strive to respect, learn about, and benefit both the environment and local communities." (Honey 2008, p. 31) These notions should be present within any establishment that classifies itself as an ecotourism destination and be commonly expressed to its guests. It is a complex issue

to enforce and oversee ecotourism establishments, to see if they are achieving ecotourism proper, though it should be the responsibility of the traveler to recognize when true ecotourism is not being achieved. "The long-term challenge is to find ways to maintain the rigor and multi-dimensional qualities of ecotourism while widening it beyond individual projects and making it integral to the concept of tourism in general." (Honey 2008, p. 33) Ultimately, the goal of ecotourism should be to move the industry beyond a new niche within nature travel, which will create identifiable boundaries, between the industries that ecotourism are now generally classified within. (Honey 2008, p. 28)

Ecotourism lite, with the presence of establishments straying away from ecotourism principles while still using the name "ecotourism," has compromised the validity of the ecotourism industry. "Although the travel industry did not originate the concept of ecotourism, it quickly adopted it, popularized it, mainstreamed it- and watered it down. The tourism industry, including the travel press, has come to view 'green travel' as a marketing tool to attract the growing number of environmentally and socially conscious travelers seeking alternatives to conventional 'mass-tourism.'" (Honey 2008, p. 25) A term that is used to encompass organizations, establishments or developments that are using "green" and the notion of sustainability as a marketing scheme is "greenwashing." One cause

of greenwashing is the lack of understanding of underlying principles of ecotourism. (Wood 2002, p. 12) Another reason is that the principles underlying ecotourism are being "greenwashed" by superficial, feel-good rhetoric and minor cost-saving modifications that do not transform tourism into a tool that protects the environment, benefits local communities, and educates the tourist. (Honey 2008, p. 33)

An example of an existing ecolodge that is used to demonstrate how qualities of ecotourism lite can be hidden by "ecotourism destinations" is Maho Bay. Maho Bay is located in St. John, U.S. Virgin Islands, owned by Stanley Selengut, and has succeeded in creating a worldwide reputation as one of the best known and publicized ecotourism destinations. (Honey 2008, p. 71) The development contains four unique and environmentally conscious developments, ranging from rustic tents to more luxurious condominiums. (Honey 2008, p. 71-72) The environmental setting is common to many other ecotourism destinations, being in close proximity to coastal or marine environments. "The oldest resort complex is the Maho Bay camps, which consist of 114 platformed tent-cottages hidden in deep foliage overlooking the turquoise-blue bay." (Honey 2008, p. 72) A wooden boardwalk system was instituted to connect all the facilities and rooms, while also to minimize soil erosion and protect the various flora and fauna found on site. Sustainable practices are instituted

throughout all four facilities at Maho Bay. Selengut has reached out to many sources of revenue to help assist with many of the sustainable practices that have been implemented. "He received help from the Energy Office, which provided the computers, and the U.S. Department of Energy's Sandia National Laboratories, which supplied experimental products, such as solar ovens, solar ice-making machines, and biodegradable detergents." (Honey 2008, p. 72)

Selengut's resorts appear to be a model of true ecotourism development, though looks can be deceiving. (Honey 2008, p. 74) During the International Ecotourism Society's International Ecolodge Development Forum and Field Seminar in October 1994, Maho Bay came under close scrutiny by ecotourism experts from around the world. (Honey 2008, p. 74) The majority of the participants praised Selengut for effectively and creatively pushing the perimeters of ecolodge design in a blend of low-impact construction, recycled materials, and renewable energy sources. (Honey 2008, p. 74) On the other hand, some participants at the conference were not impressed. Many experts interviewed at the conference were disturbed to discover that the Maho Bay Camps and other properties by Selengut were not attentive to the local populations (no employment options and no inclusive of cultural customs), conservation, and educating the visitors. (Honey 2008, p. 74) "Joshua

Reichert, managing director of the Pew Charitable Trusts' environmental program, argued that sound ecotourism should meet four criteria: (1) it should be designed, built, and operated so that it leaves a 'soft imprint.' (2) it should contribute money to the local economy and local community services; (3) it should contribute financially to environmental protection; and (4) it should educate visitors and members of the local community. Reichert concluded that under scrutiny, the Maho Bay property, like much else that is advertised as ecotourism, falls short on a number of counts." (Honey 2008, p. 74)

One aspect of the Maho Bay camps that is headed closer to true ecotourism is the "Trash to Treasure" craft making program. The program offers glass blowing, textile recycling and pottery making studios designed for a unique experience for its guests. (Honey 2008, p. 75) "The program turns a significant amount of the resort's waste, especially glass bottles, into jewelry, ornaments, and other souvenirs." (Honey 2008, p. 75) The program, although innovative, pays little attention and integration of local artisanship. (Honey 2008, p. 75) The employees working in the studio are not islanders and Selengut claims that integrating local arts and crafts is difficult because of the expense. Honey discovered that many of the local shops are full of cost-friendly pottery, baskets and paintings. Maho Bay Camps and the other properties hire very few local West

Indians. (Honey 2008, p. 74) With further investigation, Honey found that many of the employees are from North America on a work exchange program. "This work exchange staff- averaging about twenty five volunteers at any given time - is required to work four hours per day in exchange for a tent, a deep discount on food at the restaurant, and a stint in the tropics." (Honey 2008, p. 74) Selengut's argument to the issue revolves around the notion that there is a low unemployment rate in the Virgin Islands. "However, according to the U.S. Virgin Islands Department of Labor, unemployment averaged between 3.5 and 5.9 percent between 1992 and 1997, and as of 2007, has risen to 7.5 percent for the 'leisure and hospitality.'" sector (Honey 2008, p. 75) Projects such as Maho Bay increase the presence of ecotourism lite establishments. Such establishments must continue to be uncovered to show visitors to such destinations what harm is actually being generated.

"While over the last decade there has been considerable progress in deepening the practices of ecotourism, expanding its breath, 'greening' mainstream tourism, and setting more solid standards, ecotourism lite still remains far too common." (Honey 2008, p. 68) For change to true ecotourism to occur, a shift from not just the industry to more readily regulate organizations, but a shift of the mindset of travelers must occur. The tourism industry and its various segments that comprise it are instituted to bring in revenue by allowing people

to visit various destinations. This can be seen in the Maho Bay developments; but what benefits, both culturally and ecologically, are truly occurring from the developments? Once a common standard is felt by all tourists, one that improves both the cultural and ecological realms they visit, developments will continue to greenwash and compromise their environments.

Ecotourism's Future Relevance

Some experts have pronounced ecotourism dead or hopelessly diluted. (Honey 2008, p. 33) Martha Honey, in her assessment, found that "although ecotourism is quite rare, often misdefined and frequently imperfect, it is still in its adolescence, not on its deathbed." (Honey 2008, p. 33) Deciding whether ecotourism matures into adulthood and whether it gains proper recognition and serves as a basis in which we travel and interact with our physical and cultural environment, is dependent on various factors. (Honey 2008, p. 33) "One step toward ensuring ecotourism's survival is helping to build a more discriminating and informed traveling public. Ecotourism travelers, practitioners, professionals, educators, and proponents need to understand the major problems and challenges confronting ecotourism, as well as how ecotourism fits within the tourism industry and within a country's development strategy." (Honey 2008, p. 33) Taking steps to inform the general public is a necessary measure that must be taken in order to see ecotourism and its principles shape the mindsets of travelers across the world. Ecotourism must become a vehicle for significantly transforming the practices and ideals that the tourism industry currently carries out. (Honey 2008, p. 28)

It is intended that the purpose of this manual is viewed as a measure taken to help identify what considerations must be recognized by designers, developers and owners of ecolodges. It is important for

a reader to fully understand the importance of creating a true ecotourism destination, not merely a destination much like other existing mass tourism developments. In recent years, major attention has been given to the natural and cultural environments across the world. True ecotourism is an industry that has the ability to sustain and conserve the world's various cultural and ecological entities. This manual portrays this message and should be followed with the idea of achieving sustainable designs for ecolodges. All associated products within this manual conform to ecotourism and ecolodge true principles. This manual will help designers create developments that will attract visitors, while continuing to advertise the importance and benefits of true ecotourism.



Appendix B | Fitness Design Methodology

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Intent

The project methodology appendix is intended to guide a reader through the process I personally adopted to generate and complete a succinct list of design principles, guidelines and criteria (fitness design). Previous research had been conducted throughout the duration of the master's project, which was used to help identify what aspects comprise a true ecolodge that adheres to both ecotourism and ecolodge principles. The method I choose to employ, for the purpose of generating fitness design products for this manual, was to select six ecolodges located in tropical locales. The ecolodges that were selected were all awarded by National Geographic, with its publication of the "Top 50 Ecolodges of 2009". The selected ecolodge precedents, coupled with the research conducted throughout the project, enabled me to arrive at the products found within fitness design.

Fig. B-1 shows the specific process that I conducted to arrive at the final goal, fitness design. First, I took each precedent and extensively went through each of the ecolodge's websites, in order to record all information that was important to note about the ecolodge's approach in addressing factors, such as sustainability, conservation, accompanied ecolodge components included within each development and the amenities offered at each ecolodge. Once all pertinent information was recorded through all six precedents, I organized the information in a way that, first, listed

the principles found at the ecolodge and carried them through guidelines and criteria to finally show how the ecolodge had implemented different aspects of fitness design. This began to outline the initial design principles, guidelines and criteria that were used to encompass the theory of fitness design. Next, I took a look at all precedent studies and formulated a unified list of the fitness design products. This enabled me to easily navigate through each precedent and effectively find what design principles, guidelines and criteria were found not only at one ecolodge, but what themes were commonly present among the various ecolodges. Finally, once all ecolodge studies were completed and uniform in their list of design principles, guidelines and criteria, descriptions were drafted to define each fitness design product and their purpose for the manual.

The descriptions of individual fitness design products have gone through many revisions, in order to present the most concise and effective list for the manual. The descriptions were generated from my own design philosophy and literary sources, in order to provide more detailed descriptions and concrete examples. The book, *International Ecolodge Guidelines*, was heavily used to better inform each fitness design product. This book covers a large breadth of topics that are specific to ecolodge design, which provided necessary contextual information for the majority of design principles, guidelines and criteria. Additional

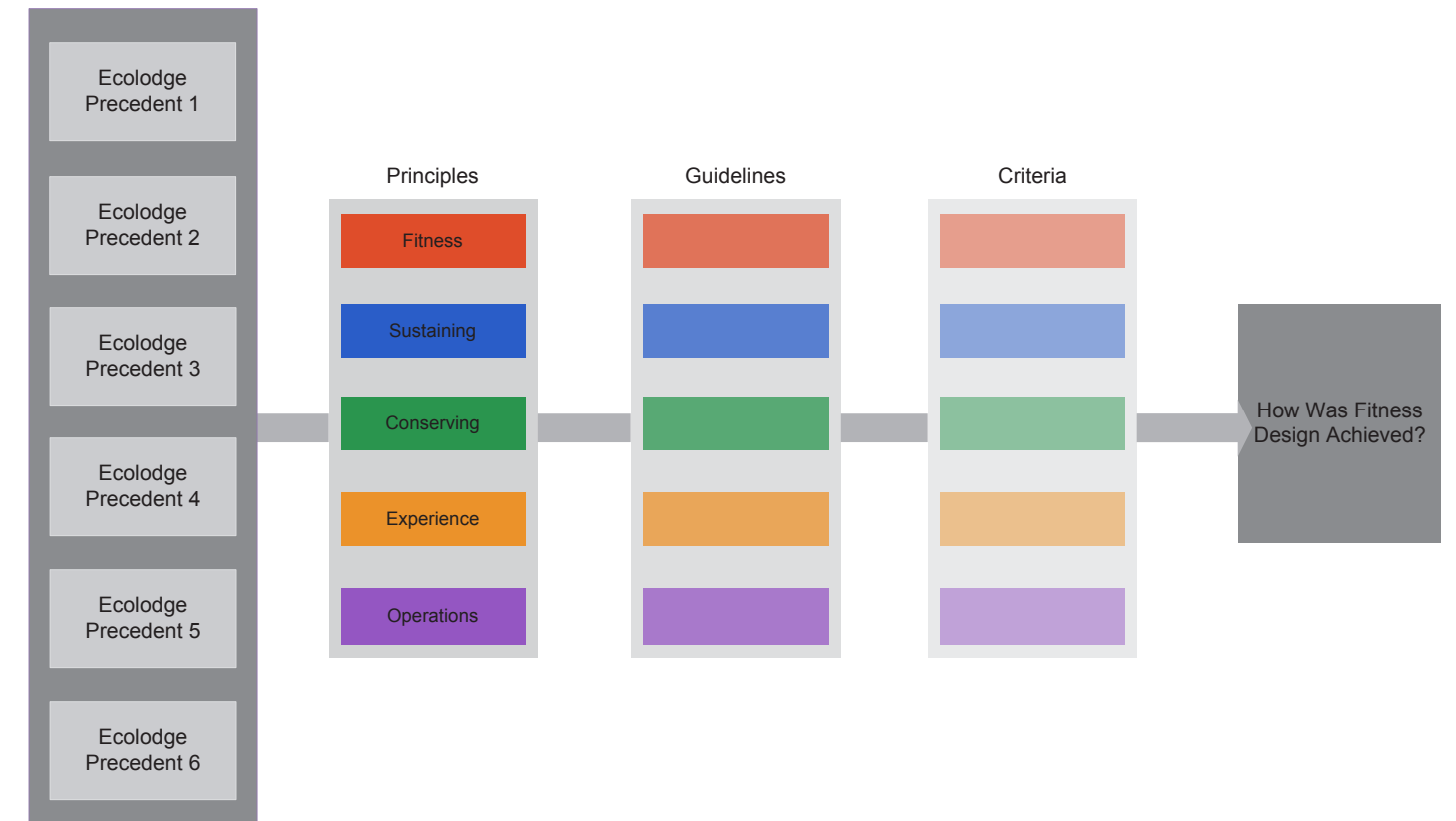
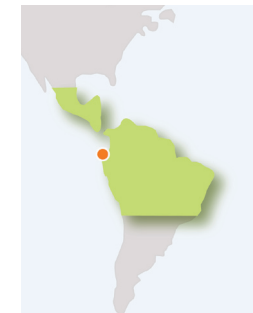


Fig. B-1. Process diagram - fitness design methodology. Generated by Andrew Glenski

sources, both internet and books, were utilized for further developing fitness design. Fitness design and its associated products (design principles, guidelines and criteria) is the culmination of studying ecolodge precedents (that achieve ecotourism and ecolodge principles) and researching specific topics that are found within the manual.

Ecolodge Study 1



Ecolodge Precedent 1

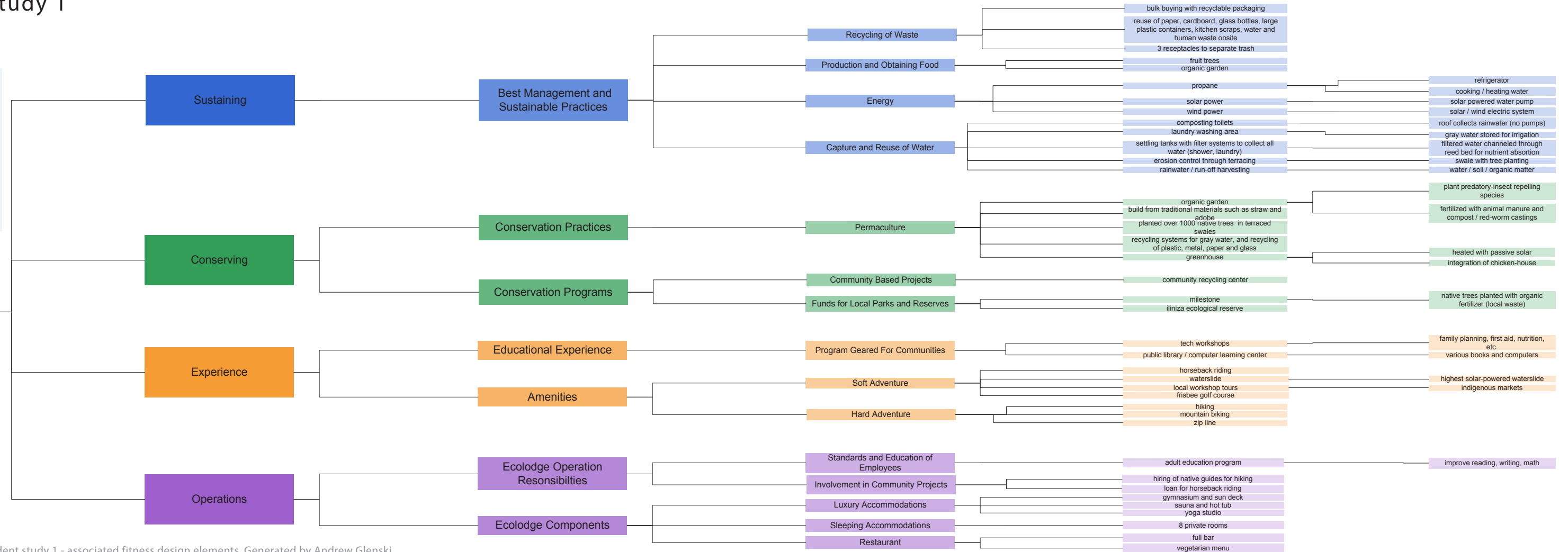


Fig. B-2. Ecolodge precedent study 1 - associated fitness design elements. Generated by Andrew Glenski

Ecologue Study 2



Ecologue Precedent 2

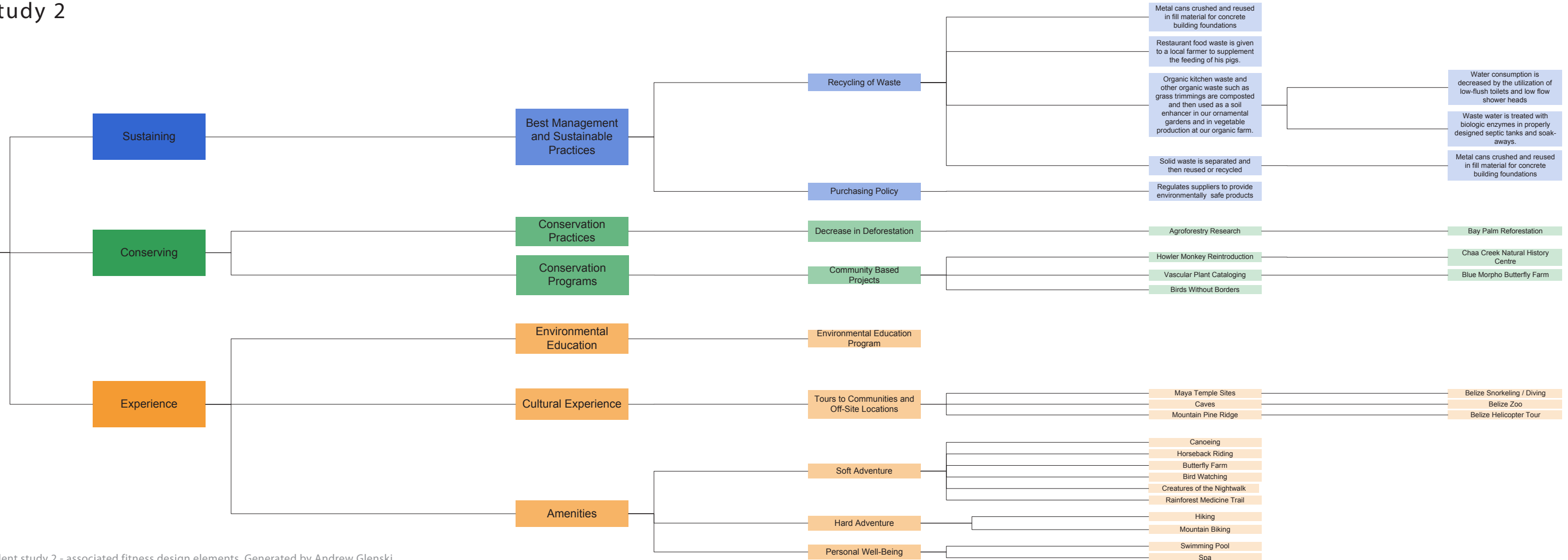


Fig. B-3. Ecologue precedent study 2 - associated fitness design elements. Generated by Andrew Glenski

Ecology Study 3

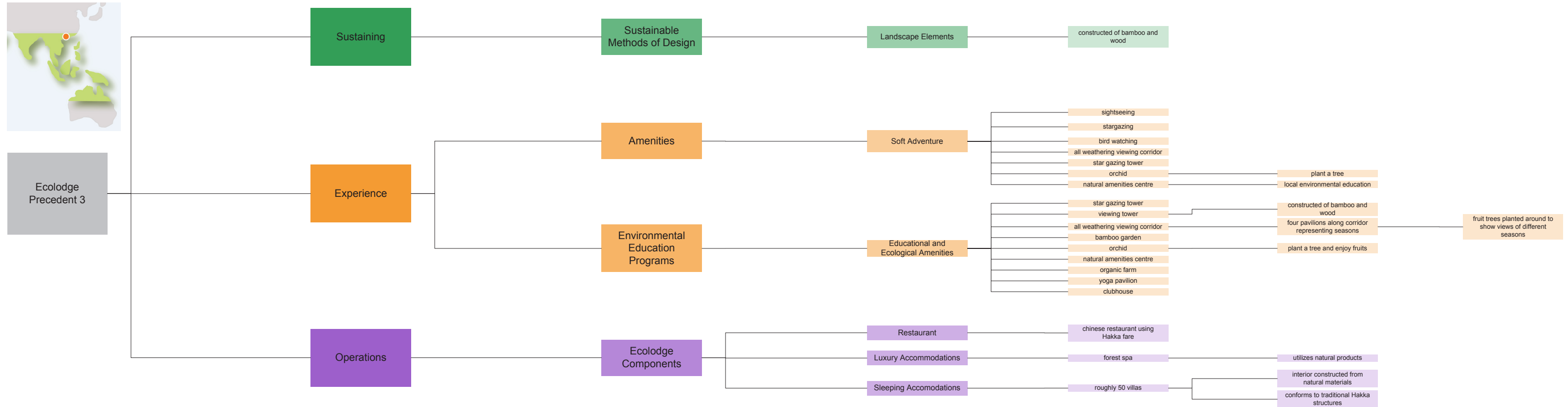


Fig. B-4. Ecology precedent study 3 - associated fitness design elements. Generated by Andrew Glenski

Ecolodge Study 4

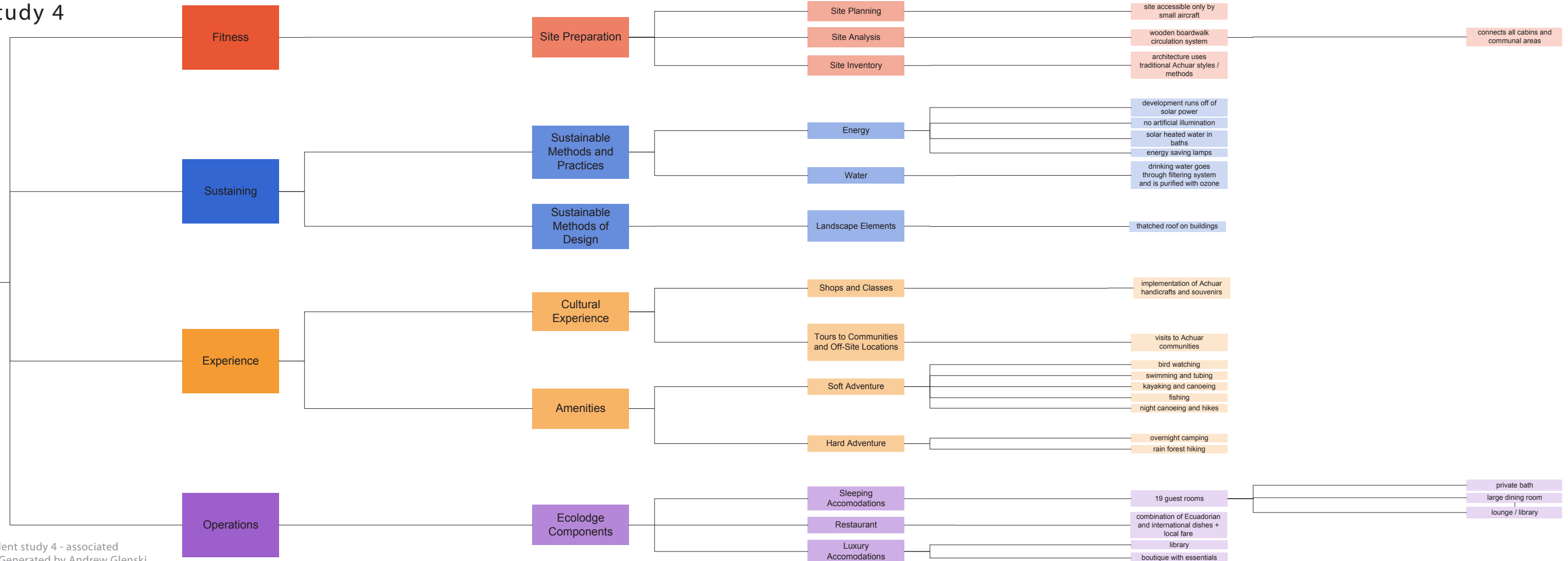
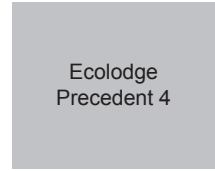
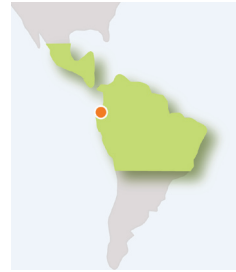
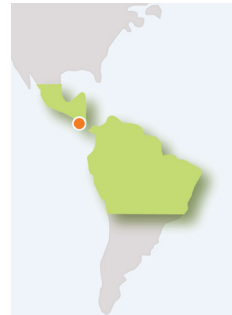


Fig. B-5. Ecolodge precedent study 4 - associated fitness design elements. Generated by Andrew Glenski

Ecologue Study 5



Ecologue Precedent 5

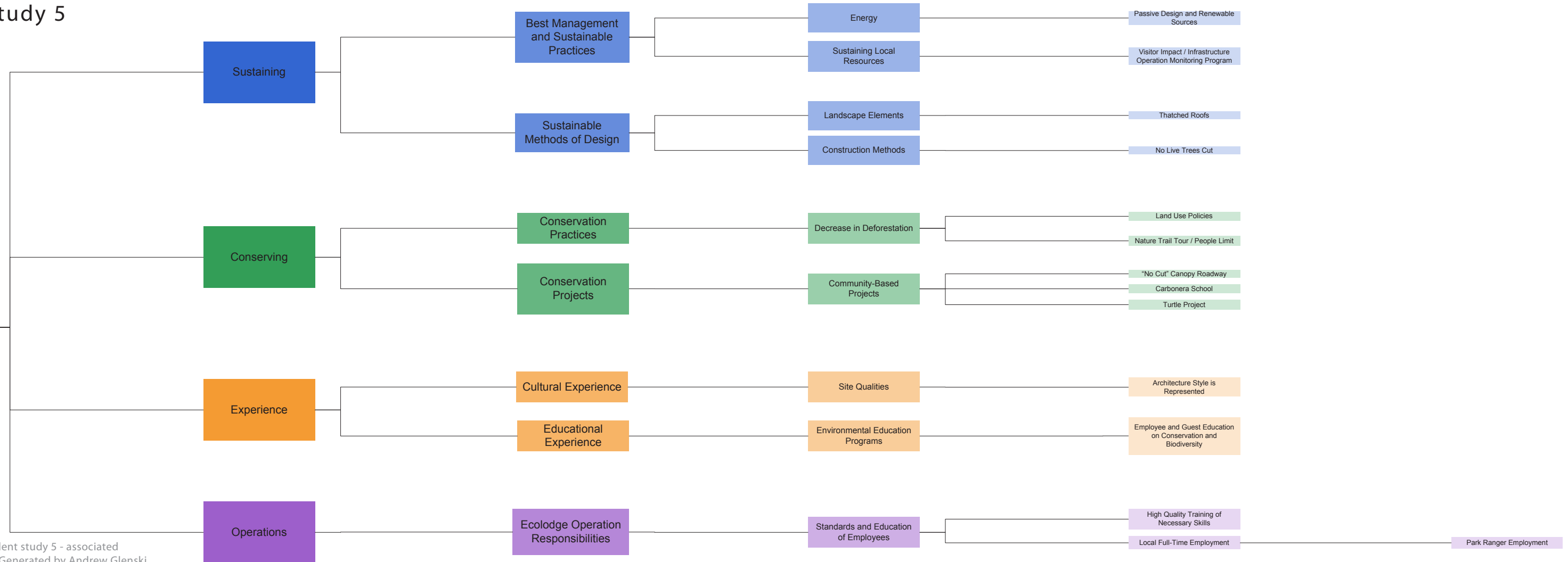


Fig. B-6. Ecologue precedent study 5 - associated fitness design elements. Generated by Andrew Glenski

Ecologie Study 6

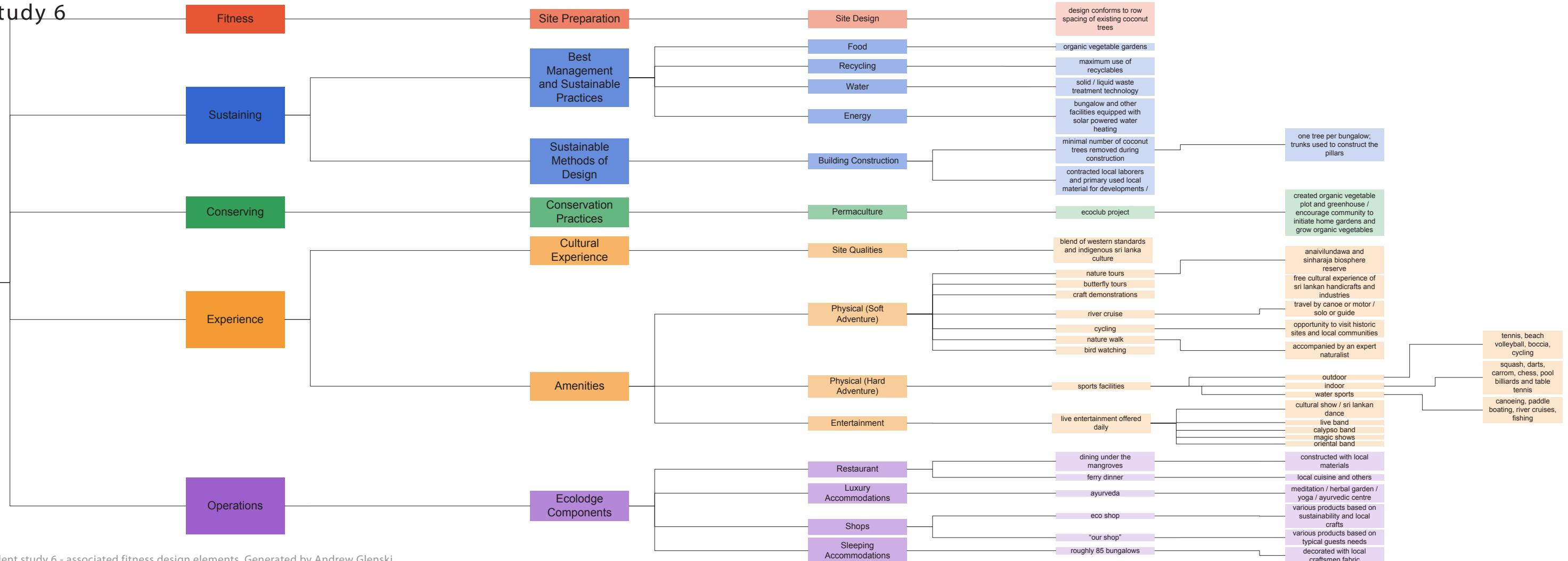
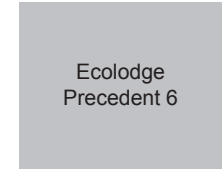
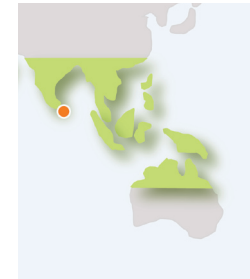


Fig. B-7. Ecologie precedent study 6 - associated fitness design elements. Generated by Andrew Glenski

Conclusions from Methodology Process

One conclusion I have found through my selected methodology is that contacting the operators of the selected ecolodge developments could have further informed me of the specific practices conducted at each ecolodge. Some questions did arise throughout the process of forming fitness design, in which having contacts from ecolodges could have relieved extra research. Even though some extra work could have been alleviated, the presented information in the fitness design for this manual was informed through the process of conducting research.

Overall, the process I conducted to arrive at conclusions regarding fitness design was informative and covered a majority of the considerations (fig. B-8) a designer would face during the design process of an ecolodge. I felt the ecolodges selected covered a diverse range of projects, each with differentiating design issues, and helped to outline what an ecolodge could entail in terms of projects, practices and amenities. I realize that studying ecolodge precedents alone does not cover the breadth of topics in enough detail in order to arrive at a truly informed fitness design. The integration of literature and additional research helped to better inform fitness design and provided concrete examples of how the products of fitness design could and have been applied.

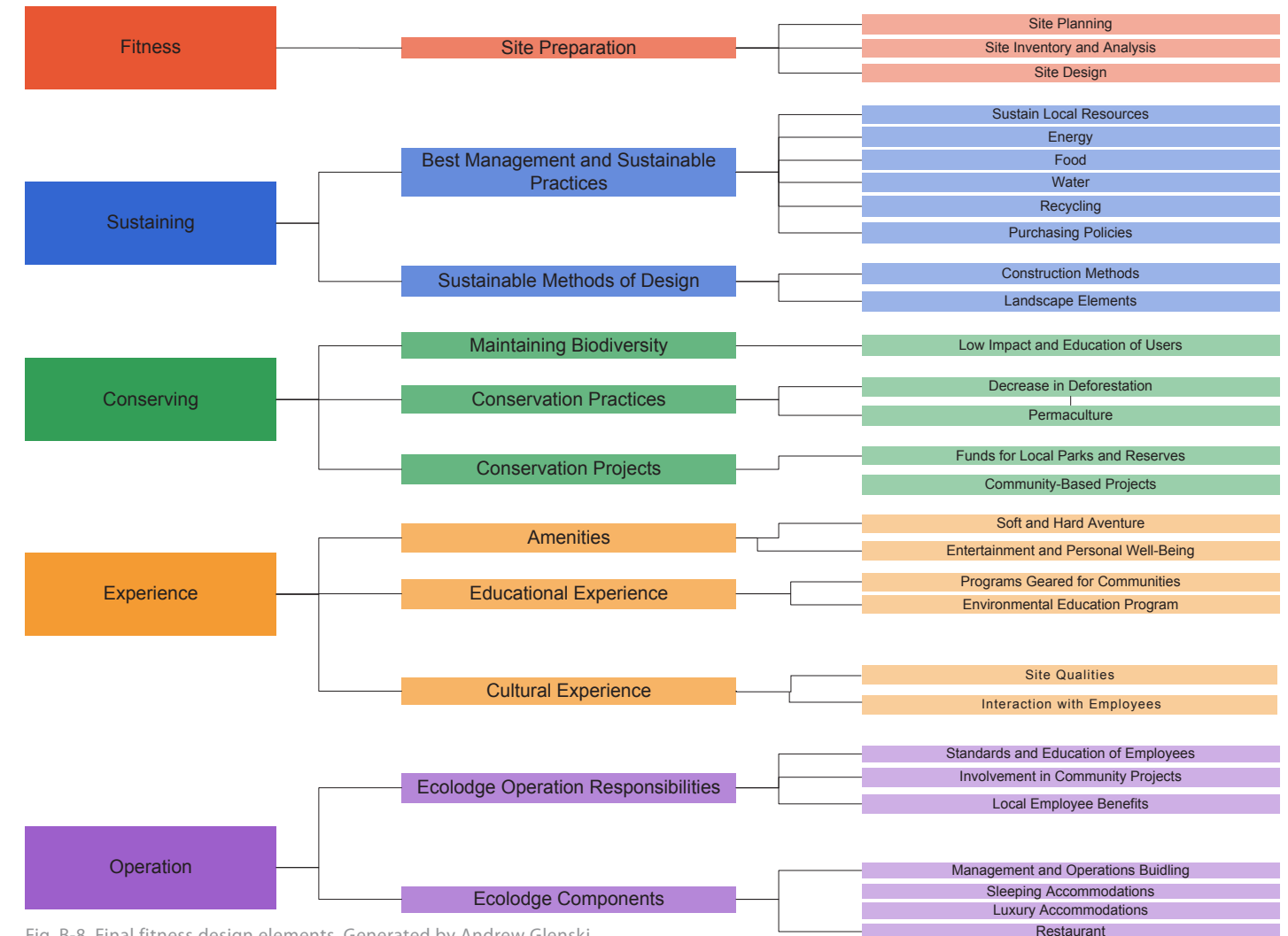


Fig. B-8. Final fitness design elements. Generated by Andrew Glenski



Glossary

Best Management Practices: Are “a set of operational standards that are considered to be the most effective and efficient within a sector with respect to certain desired outcomes, such as environmental sustainability and effective interpretation in the case of ecotourism.” (Weaver 2002, p. 657)

Conserving: the maintenance of the environment, maintenance of the habitat, preservation of the environs, or the protection of the environment.” (<http://legal-dictionary.thefreedictionary.com/environmental+conservation>)

Ecolodge: An ecolodge is an accommodation facility that satisfies at least five of the criteria listed below, three of which must embody the main principles of ecotourism; that of conservation of neighboring lands, benefits to local communities and interpretation to both local populations and guests (Mehta, 5)

- Helps in the conservation of the surrounding flora and fauna
- Endeavors to work together with the local community
- Offers interpretive programs to educate both its employees and tourists about the surrounding natural and cultural environments
- Uses alternative, sustainable means of water acquisition and reduces water consumption
- Provides for careful handling and disposal of solid waste and sewage
- Meets its energy needs through passive design and renewable energy sources
- Uses traditional building technology and materials wherever possible and combines these with their modern counterparts for greater sustainability
- Has minimal impact on the natural surroundings during construction
- Fits into its specific physical and cultural contexts through careful attention to form, landscaping and color, as well as the use of vernacular architecture
- Contributes to sustainable local community development through educational programs and research

Ecotourism: Responsible travel to natural areas that conserves the environment and improves the well being of local people (T.I.E.S). The main principles of ecotourism include the conservation of neighboring lands, benefits to the local communities and interpretation to both local populations and guests (Mehta, 5).

Hard Adventure: Hard tourism requires greater levels of skill and incorporates more significant risk than that of soft adventure. (<http://www.onecaribbean.org/content/files/SoftAdventure.pdf>)

Fitness Design: A “fit” design is intended to achieve sustainability and quality of life for the environment and the communities that have daily interaction with the development.

Permaculture: A unique approach to site design that integrates landscapes, gardens, built structures, humans, flora and fauna into permanent systems.

Soft Adventure: Soft adventure is the term used to describe the type of adventure tourism that requires little or no experience and is low risk. (<http://www.onecaribbean.org/content/files/SoftAdventure.pdf>)

