

Module 2

Practicum 1: Threats to endangered Liberian species

Introduction

Understanding threats to biodiversity is essential to alleviating the effects of these threats. Discussions of the impact of human activity are often theoretical and general, in order to ensure all aspects of the threat are grasped. It is, however, also important to provide specific relatable instances so as to personalize the threats caused directly due to human activity

Objective

This practicum helps students focus on species and think critically about how these species are affected by various threats. It creates a point from which students may begin to think about which actions they can take to reduce the impact of threats on species, by enabling them to firstly identify the most serious threat for the species: Habitat Destruction, Habitat Conversion, Invasive Species, Overexploitation, Pollution. Climate Change is omitted from this exercise.

This exercise is built on the assumption that students have a simple understanding of the ecology of the selected species for their species group, i.e. the needs, habitat preference, characteristics, perceptions by society, and uses by people of large/small mammal, amphibians, reptile, birds, and plants.

Procedures

Divide students into groups of 3-5.

Each group will select (or be assigned with) two animal species and one plant species from the list of threatened species of Liberia (Instructor will try to ensure that groups do not select the same species).

Based on the summarized threats discussed so far, the groups will identify the one highly relevant threat for each of the three species they have selected.

Species Threat Worksheet (1 per group)

Species name (Common/Scientific)	Species type (Plant/Mammal/Bird /Reptile/Amphibian)	Primary Threat (1)	Secondary Threat (1)	Reasoning <i>Briefly state why these threats are the focus for this species.</i>
1.				
2.				
3.				

This exercise may be revisited after the threats have been discussed in finer detail.

Threatened fauna of Liberia including their IUCN Red List status

Scientific Name	Common Name	Group	IUCN Status
<i>Arthroleptis langeri</i>		Amphibian	Endangered
<i>Acanthixalus sonjae</i>	Ivory Coast Wart Frog	Amphibian	Vulnerable
<i>Nimbaphrynoides occidentalis</i>	Mount Nimba Viviparous Toad	Amphibian	Critically Endangered
<i>Hyperolius nienokouensis</i>		Amphibian	Endangered
<i>Hyperolius nimbae</i>	Mount Nimba Reed Frog	Amphibian	Endangered
<i>Sclerophrys taiensis</i>	Tai Toad	Amphibian	Endangered
<i>Ceratogymna elata</i>	Yellow-casqued Hornbill	Bird	Vulnerable
<i>Schistolais leontica</i>	Sierra Leone Prinia	Bird	Endangered
<i>Bycanistes cylindricus</i>	Brown-cheeked Hornbill	Bird	Vulnerable
<i>Lobotos lobatus</i>	Western-wattled Cuckooshrike	Bird	Vulnerable
<i>Picathartes gymnocephalus</i>	White-necked Picathartes	Bird	Vulnerable
<i>Melaenornis annamarulae</i>	Nimba Flycatcher	Bird	Vulnerable
<i>Bubo shelleyi</i>	Shelley's Eagle Owl	Bird	Vulnerable
<i>Hydrobates leucorhous</i>	Leach's Storm Petrel	Bird	Vulnerable
<i>Psittacus timneh</i>	Timneh Parrot	Bird	Endangered
<i>Criniger olivaceus</i>	Yellow-bearded Greenbul	Bird	Vulnerable
<i>Scotopelia ussheri</i>	Rufous-fishing Owl	Bird	Vulnerable
<i>Phyllanthus atripennis</i>	Capuchin Babbler	Bird	Vulnerable
<i>Agelastes meleagrides</i>	White-breasted Guineafowl	Bird	Vulnerable
<i>Necrosyrtes monachus</i>	Hooded vulture	Bird	Critically Endangered
<i>Colobus polykomos</i>	Black-and-White Colobus	Mammal	Endangered
<i>Choeropsis liberiensis</i>	Pygmy Hippopotamus	Mammal	Endangered
<i>Rhinolophus guineensis</i>	Guinean Horseshoe Bat	Mammal	Endangered
<i>Rhinolophus ziama</i>	Ziama Horseshoe Bat	Mammal	Endangered
<i>Hipposideros marisae</i>	Aellen's Roundleaf Bat	Mammal	Vulnerable
<i>Liberiictis kuhni</i>	Liberian Mongoose	Mammal	Vulnerable
<i>Poiana leightoni</i>	West African Linsang	Mammal	Vulnerable
<i>Genetta bourloni</i>	Bourlon's Genet	Mammal	Vulnerable
<i>Cephalophus jentinki</i>	Jentink's Duiker	Mammal	Endangered
<i>Cephalophus zebra</i>	Zebra Duiker	Mammal	Vulnerable

<i>Caracal aurata</i>	Golden Cat	Mammal	Vulnerable
<i>Neoromicia roseveari</i>	Rosevear's Serotine	Mammal	Endangered
<i>Cercocebus atys</i>	Sooty Mangabey	Mammal	Vulnerable
<i>Cercopithecus diana</i>	Diana Monkey	Mammal	Endangered
<i>Trichechus senegalensis</i> *	African Manatee	Mammal	Vulnerable
<i>Micropotamogale lamottei</i>	Nimba Otter Shrew	Mammal	Vulnerable
<i>Smutsia gigantea</i>	Giant Pangolin	Mammal	Endangered
<i>Phataginus tetradactyla</i>	Black-bellied Pangolin	Mammal	Vulnerable
<i>Phataginus tricuspis</i>	White-bellied Pangolin	Mammal	Endangered
<i>Sousa teuszii</i> *	Atlantic Hump-backed Dolphin	Mammal	Critically Endangered
<i>Pan troglodytes verus</i>	Western Chimpanzee	Mammal	Endangered
<i>Physeter macrocephalus</i> *	Sperm Whale	Mammal	Vulnerable
<i>Piliocolobus badius</i>	Upper Guinea Red Colobus	Mammal	Endangered
<i>Panthera pardus</i>	Leopard	Mammal	Vulnerable
<i>Procolobus verus</i>	Olive Colobus	Mammal	Vulnerable
<i>Rhinolophus hillorum</i>	Hill's Horseshoe Bat	Mammal	Vulnerable
<i>Loxodonta cyclotis</i>	African Forest Elephant	Mammal	Critically Endangered
<i>Cnemaspis occidentalis</i>	Western Gecko	Reptile	Endangered
<i>Mecistops cataphractus</i>	African Slender-snouted Crocodile	Reptile	Critically Endangered
<i>Lepidochelys olivacea</i>	Olive Ridley Turtle	Reptile	Endangered
<i>Osteolaemus tetraspis</i>	West African Dwarf Crocodile	Reptile	Vulnerable
<i>Chelonia mydas</i> *	Green Sea Turtle	Reptile	Vulnerable
<i>Bitis nasicornis</i>	Rhinoceros Viper	Reptile	Endangered
<i>Kinixys homeana</i>	Home's Hinged-backed Tortoise	Reptile	Critically Endangered
<i>Dermochelys coriacea</i> *	Leatherback Sea Turtle	Reptile	Endangered
<i>Cyclanorbis senegalensis</i>	Senegal Flapshell Turtle	Reptile	Vulnerable
<i>Trionyx triunguis</i>	African Softshell Turtle	Reptile	Vulnerable

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- *Marine species.

Table 3: Checklist of threatened species plants of Liberia including their IUCN status

Scientific Name	Common Name	IUCN Status
<i>Anubias gracilis</i>		Vulnerable
<i>Gymnosiphon samoritoureanus</i>		Endangered
<i>Hypolytrum cacuminum</i>		Endangered
<i>Nemum bulbostyloides</i>		Vulnerable
<i>Dracaena calocephala</i>		Vulnerable
<i>Diaphananthe sarcorhynchoides</i>		Vulnerable
<i>Gladiolus praecostatus</i>		Vulnerable
<i>Aframomum elegans</i>		Vulnerable
<i>Eriocaulon adamesii</i>		Critically Endangered
<i>Scleria liberica</i>		Vulnerable
<i>Anadelphia lomaense</i>		Vulnerable
<i>Leersia triandra</i>		Endangered
<i>Mapania jongkindii</i>		Endangered
<i>Sciaphila africana</i>		Endangered
<i>Xyris festucifolia</i>		Vulnerable
<i>Alafia whytei</i>		Vulnerable
<i>Marsdenia magniflora</i>		Vulnerable
<i>Ledermanniella aloides</i>		Vulnerable
<i>Monocyclanthus vignei</i>		Endangered
<i>Nesogordonia papaverifera</i>		Vulnerable
<i>Khaya ivorensis</i> *	African Mahogany	Vulnerable
<i>Khaya anthotheca</i> *	White Mahogany	Vulnerable
<i>Entandrophragma utile</i> *	Sipo	Vulnerable
<i>Monopetalanthus compactus</i>		Vulnerable
<i>Haplormosia monophylla</i>		Vulnerable
<i>Loesenera kalantha</i>		Vulnerable
<i>Lophira alata</i> *	Ekki	Vulnerable
<i>Anopyxis klaineana</i> *		Vulnerable
<i>Copaifera salikounda</i>		Vulnerable
<i>Cordia platythyrsa</i>		Vulnerable
<i>Entandrophragma candollei</i> *	Cedar Kokoti	Vulnerable
<i>Terminalia ivorensis</i> *	Black Afara	Vulnerable
<i>Tieghemella heckelii</i> *	Cherry Mahogany	Endangered
<i>Tetraberlinia tubmaniana</i> *	Tetra	Vulnerable
<i>Cryptosepalum tetraphyllum</i>		Vulnerable
<i>Berlinia occidentalis</i> *		Vulnerable
<i>Amanoa strobilacea</i>		Vulnerable
<i>Drypetes afzelii</i>		Vulnerable
<i>Garcinia kola</i>	Bitter Cola	Vulnerable
<i>Gilbertiodendron bilineatum</i>	Kpendiguli	Vulnerable
<i>Millettia warneckeii</i>		Vulnerable

<i>Placodiscus pseudostipularis</i>	Endangered
<i>Trichoscypha cavalliensis</i>	Vulnerable
<i>Uvariadendron occidentale</i>	Vulnerable
<i>Dactyladenia dinklagei</i>	Vulnerable
<i>Homalium smythei</i>	Vulnerable
<i>Phyllanthus profusus</i>	Vulnerable
<i>Coffea stenophylla</i>	Vulnerable
<i>Didelotia engleri</i>	Endangered
<i>Tarenna hutchinsonii</i>	Critically Endangered
<i>Brachystegia leonensis</i>	Vulnerable
<i>Pterocarpus erinaceus</i>	Endangered
<i>Milicia regia*</i>	Vulnerable
<i>Turraeanthus africana</i>	Vulnerable
<i>Okoubaka aubrevillei</i>	Endangered
<i>Neolemonniera clitandrifolia</i>	Vulnerable
<i>Dissotis humilis</i>	Vulnerable
<i>Heterotis sylvestris</i>	Endangered
<i>Osbeckia porteresii</i>	Endangered
<i>Apodiscus chevalieri</i>	Endangered
<i>Croton dispar</i>	Endangered
<i>Psychotria samoritourei</i>	Vulnerable
<i>Napoleonaea alata</i>	Endangered
<i>Sterculia oblonga</i>	Vulnerable
<i>Impatiens nzoana</i>	Endangered
<i>Peperomia laeteviridis</i>	Vulnerable
<i>Cola angustifolia</i>	Endangered
<i>Cola baldwinii</i>	Vulnerable
<i>Cola liberica</i>	Endangered
<i>Cola simiarum</i>	Vulnerable
<i>Mostuea adamii</i>	Endangered
<i>Osbeckia praviantha</i>	Endangered
<i>Tristemma involucreatum</i>	Vulnerable
<i>Allophylus samoritourei</i>	Endangered
<i>Chytranthus ellipticus</i>	Endangered
<i>Vernonia nimbaensis</i>	Endangered
<i>Omphalocarpum ahia</i>	Endangered
<i>Bryaspis humularioides</i>	Endangered
<i>Rinorea djalonensis</i>	Endangered
<i>Campylospermum amplectens</i>	Vulnerable
<i>Leplaea adenopunctata</i>	Endangered
<i>Leplaea cedrata</i>	Vulnerable
<i>Leplaea mangenotiana</i>	Vulnerable
<i>Leplaea thompsonii</i>	Vulnerable

<i>Tessmannia baikieaoides</i>	Vulnerable
<i>Xylopia dinklagei</i>	Endangered
<i>Glennia adami</i>	Vulnerable
<i>Eugenia liberiana</i>	Endangered
<i>Eriosema arenicola</i>	Vulnerable
<i>Tricalysia faranahensis</i>	Vulnerable
<i>Urera cuneata</i>	Vulnerable
<i>Placodiscus riparius</i>	Vulnerable
<i>Dactyladenia smeathmannii</i>	Endangered
<i>Guibourtia leonensis</i>	Vulnerable
<i>Beilschmiedia caudata</i>	Vulnerable
<i>Beilschmiedia chevalieri</i>	Vulnerable
<i>Pleioceras afzelii</i>	Endangered
<i>Pavetta platycalyx</i>	Vulnerable
<i>Didelotia gracillima</i>	Vulnerable
<i>Aulacocalyx divergens</i>	Vulnerable
<i>Baphia spathacea</i>	Endangered
<i>Cassipourea firestoneana</i>	Endangered
<i>Cassipourea lescotiana</i>	Vulnerable
<i>Crudia liberica</i>	Critically Endangered
<i>Cryptosepalum minutifolium</i>	Endangered
<i>Dactyladenia globosa</i>	Endangered
<i>Didelotia afzelii</i>	Vulnerable
<i>Eugenia pobeguinii</i>	Vulnerable
<i>Fegimanra acuminatissima</i>	Vulnerable
<i>Gaertnera liberiensis</i>	Critically Endangered
<i>Gilbertiodendron aylmeri*</i>	Vulnerable
<i>Gilbertiodendron ivorense*</i>	Vulnerable
<i>Gilbertiodendron obliquum</i>	Critically Endangered
<i>Guibourtia copallifera</i>	Vulnerable
<i>Guibourtia dinklagei</i>	Endangered
<i>Englerodendron explicans</i>	Endangered
<i>Memecylon memoratum</i>	Vulnerable
<i>Memecylon ramosum</i>	Vulnerable
<i>Millettia liberica</i>	Vulnerable
<i>Mussaenda conopharyngiifolia</i>	Vulnerable
<i>Napoleonaea sapoensis</i>	Vulnerable
<i>Placodiscus splendidus</i>	Vulnerable
<i>Polystemonanthus dinklagei</i>	Vulnerable
<i>Strombosiopsis nana</i>	Endangered
<i>Synsepalum ntimii</i>	Vulnerable
<i>Trichoscypha blydeniae</i>	Critically Endangered
<i>Trichoscypha liberica</i>	Endangered

<i>Trichoscypha linderi</i>	Endangered
<i>Zanthoxylum mezoneurispinosum</i>	Vulnerable
<i>Cassipourea hiotou</i>	Vulnerable
<i>Ficus cyathistipuloides</i>	Vulnerable
<i>Begonia fusicarpa</i>	Endangered
<i>Crossandrella adamii</i>	Critically Endangered
<i>Cyphostemma adamii</i>	Endangered
<i>Dolichos nimbaensis</i>	Endangered
<i>Guyonia tenella</i>	Endangered
<i>Ixora liberiensis</i>	Endangered
<i>Sericanthe adamii</i>	Endangered
<i>Englerodendron libassum</i>	Critically Endangered
<i>Soyauxia kwewonii</i>	Endangered
<i>Dalbergia rugosa</i>	Vulnerable
<i>Dalbergia crispa</i>	Vulnerable
<i>Dalbergia hepperi</i>	Endangered
<i>Vepris laurifolia</i>	Critically Endangered
<i>Asplenium schnellii</i>	Endangered
<i>Blotiella reducta</i>	Vulnerable
<i>Pneumatopteris blastophora</i>	Vulnerable

*Traded timber species

Practicum 2: Using the IUCN Red List

Introduction

What is the importance of biodiversity? There are no simple answers to this question. Biodiversity itself is a complex, perhaps amorphous concept, extending from genes to ecosystems and biomes, and to interactions and processes. Moreover, how does one define “important”? There are myriad ways in which we value biodiversity. Our value systems range from purely economic to ecological ones. Cultural values are also prominent but rarely universal. Values of biodiversity may also exist wholly outside the human context, as is the case of inherent values of species.

The World Conservation Union (IUCN) maintains a list of imperiled or extinct species that can serve as a useful point of discussion on why is biodiversity important. The list, known as the “IUCN Red List of Threatened Species”, is being compiled for species all over the world.

Obtaining the red list of threatened species

1. The Red List of Threatened Species is constantly being updated and modified.

For the most recent version, access the following Internet site:

<http://www.iucnredlist.org/>

2. From the web page, select the “Other Search Options.”

3. The new screen will display a series of options for searching the database. Click on “Location” in the red box on the left-hand side of the screen. Expand “Land Regions” by clicking on the “+” until you can see countries listed in a region of interest. Put a check in the box next to “your” country of interest (suggestion: pick a country you would like to learn more about).

IMPORTANT: Click the red arrow to move your selection into the box on the right-hand side of the screen. Click on “Run Search.” How many species were returned?

4. Narrow your list: Now click on “Assessment” in the red box on the left-hand side of the screen. Expand “Red List Categories.” Un-check all categories except CR and EN. Click on “Refine.” Now how many species were returned?

5. These are the species that, without concerted conservation effort, are about to be lost from your country.

Classes of “importance”

There are a variety of reasons why not letting these species go extinct is important. Reasons why these species are important can be grouped into several categories. Here is a subset of some categories used to examine the value of biodiversity:

- **Direct Use Values:** Species provide various goods or products to humans, many of which play important roles in human economies. Examples include food, medicine, timber, fiber, etc.
- **Indirect Use Values:** Species provide services to humans as well as to other species. These include pollination, nutrient cycling, regulation of the atmosphere and climate. Some other indirect values include:
 - *Ecological Value:* All species are supported by the interactions among other species and ecosystems, each providing an ecological value to one another. Loss of species makes ecosystems less resilient and often less productive.
 - *Cultural and Spiritual Value:* The identity of human cultures around the world is attached to varying degrees to wild species. Wild species are often referred to in religious texts. Outside of formal religion, many people feel connected to species for reasons that can be hard to explain. Some may be inspired by a species' intrinsic beauty, revere it for its strength, or admire it for its cleverness. Whatever the case, cultural diversity is closely linked to wild species.

Evaluating why species are important

Using the list you generated, consider: What does it matter if these species go extinct in your country? In other words, why are they important?

Indirect use value

Search through the list of imperiled species of your country and identify three species that provide a significant ecological value, function, or service. Describe their ecological value. Ecological values can often be the most elusive to identify so think hard about each species and how it fits into and contributes to the ecosystem where it lives. Does the species provide pollination services? Does it prey on pests? Does it play a role in nutrient and carbon cycles? Think broadly about ecosystem interactions and consider what role these species might play. What ecological loss would each species' extinction represent? Write down the species' name and your thoughts on its ecological role.

Direct use value

Now search through the species list and identify three imperiled species that provide significant value as a good or product. Describe that value. Does the species represent a source of food? Of fiber? Of materials? Of medicine? Is it traded? What loss would its extinction represent? Write down the species' name and your thoughts on its value as a good.

Other indirect values - Cultural and spiritual value

Now search through the species list and identify three imperiled species that have cultural value. Describe that value. Does the species play a role in myth or literature? Is it beautiful? Is it scary? Is it intriguing or curious? What loss would its extinction represent? Write down the species' name and your thoughts on its cultural significance to you.

Integration

As a class, bring together your lists of case species and associated values. Discuss as a group whether we as a society bear an obligation to act as responsible stewards of these species. *Should we conserve them for the present or the future values (potential value) that they contribute to the human species?* Take sides and explore all perspectives. One extreme position is that the fates of none of these imperiled species matter in the larger context of human suffering that is so widespread today. Another extreme is that we must save every species at any cost because they all have an inherent right to exist (intrinsic value). The bottom line is to consider whether we have an obligation to our children and their children to find a way to conserve these species (bequest value). What do you as an individual and your class as a group decide?