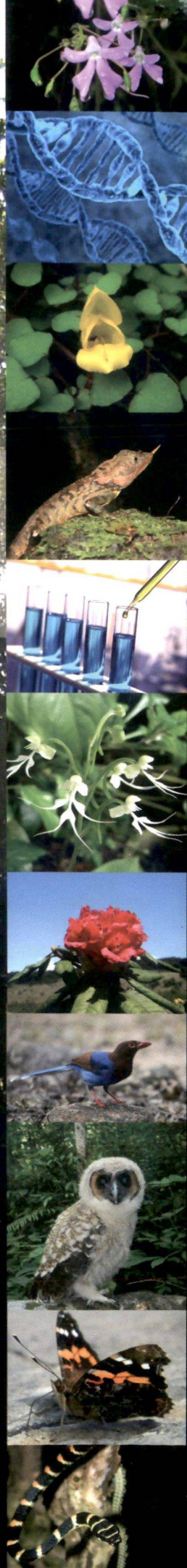




Hand book on Biodiversity Research

**Biodiversity Secretariat
Ministry of Mahaweli Development and Environment**





Hand book on Biodiversity Research



2015

Biodiversity Secretariat
Ministry of Mahaweli Development and Environment

Hand book on Biodiversity Research

Year of Publication : 2015

Published by : Biodiversity Secretariat, Ministry of Mahaweli Development and Environment

All rights of this book belong to the Ministry of Mahaweli Development and Environment

All rights Reserved

ISBN Number : ISBN 978-955-0033-95-9

Supervision : R.H.M.P. Abeykoon, Director, Biodiversity Secretariat,
Ministry of Mahaweli Development and Environment

Coordination : W.A. Himali De Costa, Biodiversity Secretariat
Himali Eranthika Gamage, Biodiversity Secretariat

Cover page design : Shirmilee Iresha Rajapakse, Biodiversity Secretariat

Printed by : Iris Colour Graphics Limited

Cover page photos : Shirmilee Iresha Rajapakse
Susantha Udagedera
Dr. Chanaka Fernando
Dr. Hemachandra Kularatne

Inside photos : Dr. Chanaka Fernando
Susantha Udagedera

***Hand book on
Biodiversity Research***

Expert Advice

National Experts Committee on Biological Diversity

Contributors

**Prof. Sarath Kotagama
Mr. Jagath Gunawardena
Mr. Anura Sathurusinha
Mr. Gamini Gamage
Mr. Ajith I. D. Silva
Ms. W.A. Himali De Costa
Ms. Shirmilee Iresha Rajapakse**

Compiled by

**Ms. W.A. Himali De Costa
Ms. Shirmilee Iresha Rajapakse**

Message

Sri Lanka possesses a wealth of plant and animal biodiversity. Sri Lanka together with Western Ghats of India is considered as one of the 34 biodiversity hotspots in the world which contains very high level of endemic plants and animals together with indigenous species and valuable traditional knowledge associated with it. In addition to the diversity of wild species, the country is exceptionally rich in cultivated plant species and domesticated animal species. In many parts of the country crop cultivation is largely dependent on traditional cultivars, old varieties and landraces. A similar situation also exists with respect to wild and domesticated animal genetic resources. The Ministry of Mahaweli Development and Environment is the national focal point and the responsible organization for biodiversity and genetic resources of Sri Lanka.

In 1992 Sri Lanka became a party to Convention on Biological Diversity and in 1994 Sri Lanka ratified the Convention. Article 12 of the Convention on Biological Diversity deals with Research and Training. According to article 12 of the Convention, parties should promote and encourage research which contributes to the conservation and sustainable use of biological diversity.

As most of you may be aware, Biodiversity Secretariat is providing financial assistance for research and knowledge exchange programmes on biodiversity conservation with the hope of getting more knowledge on fauna and flora groups which were least studied and to exchange this knowledge base with other researchers.

Lack of knowledge on application procedures regarding legal procedure for research and legal restrictions on certain species are one of the reasons that hinder research on biodiversity. Several problems arose during recent times when researchers tried to send specimens overseas for research purposes. Inadequate knowledge on application procedure, legal restrictions on certain species lead to such problems.

The objective of this book is to create awareness for researchers on application procedure, legal restrictions and requirements of biodiversity related researches.

Thank you.

R.H.M.P. Abeykoon
Director / Biodiversity Secretariat
Ministry of Mahaweli Development & Environment

Contents

Page No.

1. Chapter 01:	Introduction	01
2. Chapter 02:	Historic background	05
3. Chapter 03:	Biodiversity Research Classification	09
	3.1 Subject Areas	14
	3.2 Thematic Areas	18
	3.3 Purpose	21
	3.4 Sectors	21
4. Chapter 04:	Institutional set up	23
	4.1 Research Conducting Institutions	26
	4.2 Research Approving Institutions	29
	4.3 Research Funding Institutions	29
	4.4 Research Publishing	30
	4.5 Research Data Management	30
5. Chapter 05:	Legal	31
	5.1 Why	33
	5.2 National legal instruments and provisions for entry into protected areas	33
	5.3 National legal instruments and provisions for importation of specimens	34
	5.4 National legal instruments and provisions for exportation of specimens	36
	5.5 Legal procedure and application procedure	41
	5.5.1 Department of Wildlife Conservation	41
	5.5.2 Forest Department	46
	5.5.3 Department of Agriculture	48
	5.5.4 Ministry of Mahaweli Development & Environment	52
	5.5.5 Approval “Key” for Biodiversity Research	58
	Key 1: In country research	59
	Key 2: Research with importation of specimens	67
	Key 3: Research with exportation of specimens	69
6. Chapter 06:	Non legally binding instruments	73
	6.1 Code of Ethics for Research on Biological Diversity involving Access to Genetic Resources	75
	Annexes	76
	Annex 1: Sample application form - DWC	
	Annex 2: Sample application form - FD	





Chapter 01

Introduction

Introduction

Biodiversity is the variety of organisms found on earth. The definition given in the Convention on Biological Diversity (CBD) is more explanatory; it is: “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part: this includes diversity within species, between species and of ecosystems”.

Sri Lanka is one of the 34 Biodiversity hotspots in the world. Considering the percentage of endemism it is highest in South East Asia. According to the National Red List 2012 of Sri Lanka, there are 3154 of Angiosperms, 2 Gymnosperms and 336 Pteridophytes recorded while the fauna is made of 35 Soft Corals, 208 Hard corals, 501 Spiders, 19 Centipedes, 742 Marine crustaceans, 51 Fresh water crabs, 118 Dragonflies, 205 Ants, 130 Bees, 245 Butterflies, 257 Leafhoppers, 103 Dung beetles, 287 Bivalves, 469 Gastropods, Land snails 253, 190 Echinoderms, 1377 Marine fish, 91 Fresh water fish, 111 Amphibians, 209 Reptiles, 237 Resident birds and 124 Mammals (The National Red List 2012 of Sri Lanka).

Research on biological diversity means research on the variability among living organisms as well as research on any of the components of biological diversity, which components shall include any active or dormant stage or life form, or any genetic material thereof, of an entity characterized as living, including plants, bacteria, algae, fungi, phytoplasmas, mycoplasmas, mycoplasma-like entities, protozoa, vertebrate and invertebrate fauna, as well as entities such as viruses, viroids, plasmids, phages, or any living entity related thereto whether natural or modified, as well as metabolites and other extracts of organisms to be used for research and development purposes (Code of Ethics, 2004).

The theme of research development is clearly elaborated in the Article 12 of the CBD highlight the need for research and training related to biodiversity conservation.

Most of the government organizations that deal with the conservation and use of biodiversity have a section within their institutions devoted to research. These include the Forest Department, Department of Wildlife Conservation, Department of Agriculture, Department of Export Agriculture, Department of Animal Production and Health, Department of Ayurveda and National Aquatic Resources Research & Development Agency. Some state organizations are exclusively devoted to research activities such as the Tea Research Institute, Coconut Research Institute, and Rice Research Institute. The universities too play a significant role in the national research efforts on biodiversity, and many of their research projects are being carried out in collaboration with foreign scientific institutions. National Science Foundation supports research on biodiversity by providing funds (BCAP-Biodiversity Conservation Action Plan, 1999).

All the current research on biodiversity does not add up to the level of research that is necessary to support an effective programme for a country with such a wealth of biodiversity and endemism among its indigenous fauna and flora. Further, research in biodiversity should therefore be promoted to conservation and sustainable use of indigenous species of fauna and flora, particularly those under threat. Lack of knowledge on legal procedures regarding biodiversity related researches is one of the reasons that hinder research activities.

Objective of this book is to provide researchers with necessary information particularly regarding the legal procedure on biodiversity research.

References

MOE 2012. The National Red List 2012 of Sri Lanka; Conservation status of the Fauna and Flora. Ministry of Environment, Colombo, Sri Lanka. viii + 476pp.

176. 2	Lotus	B. G. 1200. ✓	Notondisfolius	B. G.
177. 0	Thodiscantia cristata	201. ✓	peruviana	
178. 5	Pandanus fascicularis	202. ✓	M. Zey. 541.	
	November	203. 5	Cocos nucifera	
179. 5		204. —	King Coconut	
180. 1/2	vicum B. G. C	205. —	aquatica, new sp. Rumph. 2.	
181. 1/5		206. —	Arca globifera	
182. 2.	tea	207. ✓	King Arca nut. sum 4	
183. 5		208. 1/5	Uvaria sp. new.	
184. —		209. 2	Dianella ensifolia	
185. —		210. 1/5	Nauclea pumponia?	
186. 0			Sp. new	
187. 1/5	P. ...		pinus laurifolia	
188. —	Syrus indica		gle marmelos	
189. —	Bryonia laciniata			
190. —	umbell.			
191. —	Cordifol.			
192. —	Trichosanthes Cucum.			
193. 5	Echites, Rud v. g. t. 10.			
194. —	Solanum indicum			
195. 0	nigrum			
196. 5	Sida rhombifolia			
197. 0	Mastellaria indica	B. G. 1		



Dr. P. E. P. Deraniyagala



Charles Darwin



Joseph Dalton Hooker

Chapter 02

Historic Background

191. —	Cordifolia	216	Chamolia	2
192. —	Trichosanthes Cucumerianae	217	Lawsonia inermis	B. G.
193. 5	Echites, Rud v. g. t. 10.	Jungle		

Historic Background

Knowledge on Sri Lanka's exceptional biodiversity through intensive exploration rests largely on work done a century or more ago in the colonial period (The Raffles Bulletin of Zoology, 2005). This can be traced back to the work of Paul Hermann, a Dutch physician in 1670's, the *Paradisus Batavus* (1698) and *Musaeum Zeylanicum* (1717) with which began subsequent inventories (*Prodromus Faunae Zeylanicae*, 1998).

In 1810, under the advice of Sir Joseph Banks a garden named Kew was opened in Slave Island. This Garden was finally moved to Peradeniya in 1821 by Mr. Alexander Moon who published his "Catalogue of Ceylon Plants" in 1824 in which was given the botanical and native names of 1,127 plants, indigenous to the island. His successor Mr. George Gardner's (1844) chief work was the exploration of the country for the collection and preparation of its flora. Then, Dr. Thwaites for over 30 years maintained the Gardens, added largely to our knowledge of the flora of the Colony and gave the establishment its worldwide reputation. Thwaites was succeeded by Dr. Henry Trimen, established the Museum of Economic Botany, opened branch Gardens at Badulla and Anuradhapura and began the publication of his work, "The Flora of Ceylon" which however was finished by Sir Joseph D. Hooker. In 1896 Trimen was succeeded by Dr J.C. Willis and from that date a new extension of scientific work took place (<http://www.agridept.gov.lk/NBG/RBG.htm>).

However the plant life of Sri Lanka is better known compared to its animal life. Among the animals, a few groups; vertebrates such as mammals, birds and fish are better known than most invertebrate groups. Knowledge about fauna of a particular area begins with collection of specimens, followed by their study. The collection of Sri Lankan insects and other invertebrates for systematic study has a history that goes back about 150 years. Robert Templeton (1802-1892), a doctor, collected insects and other animals while stationed in Sri Lanka. New species based on his specimens were described by Francis Walker (1809-1874), John Obadiah Westwood (1805-1893) and others in 1850-1870. Several other individual experts on specific groups have made private collecting expeditions to Sri Lanka over the years (Wijesekara A., 2003).

Almost a century and a half ago, the pioneer Sri Lankan naturalist E. F. Kelaart (1852) planned that publications should be produced periodically as volumes of his "*Prodromus Zeylanicae*". While Kelaart intended mostly on building of a taxonomic inventory, present day workers on Sri Lanka's biodiversity weaves together geology, biogeography, ecology, ethology, taxonomy, conservation science, climatology, palaeontology and many other disciplines (The Raffles Bulletin of Zoology, 2005).

A successful Sri Lankan scientist in the previous century who could be considered as the father of the studies of Paleobiodiversity, although the discipline was not known by that name in his time was Dr. P. E. P. Deraniyagala, who excelled in many fields of endeavor including zootaxonomy. His researches were extensive, and have contributed immensely to the furtherance of the knowledge on fauna not only in Sri Lanka but also of the Indian region (Manamendra-Arachchi K. N., 2012).

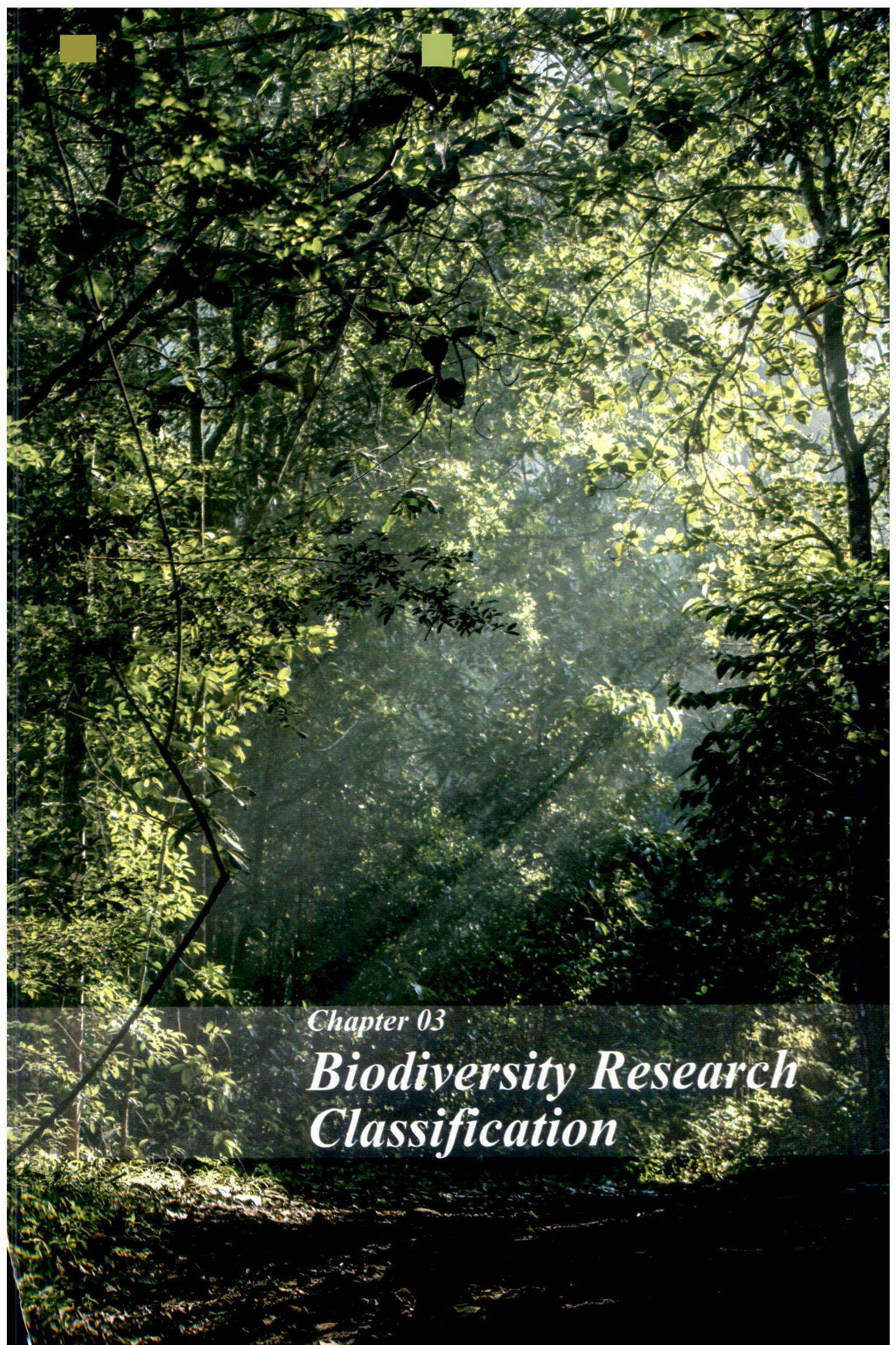
Natural history studies in Sri Lanka began to gather momentum with the commencement of a revision of the entire vascular plant flora by Dassanayake and Fosberg (1980-2004), extensive studies of hymenoptera by Krombein (1980) and the tradition of field biology initiated by Senanayake (1980). The 1990s witnessed a steadily growing output of works across an increasing diversity of taxa and disciplines. A steady but modest growth of biodiversity exploration has led to the discovery and

description of new species of birds, fresh water fish, amphibians, lizards, together with flowering plants and a large number of insects (The Raffles Bulletin of Zoology, 2005).

Even as the pace of biodiversity research accelerates however, exploration and research remains to be done in order to secure the conservation of Sri Lanka's unique biodiversity.

References

Manamendra-Arachchi K. N. (2012) Dr. Paulus Edward Pieris Deraniyagala: The Pioneer in Palaeobiodiversity, In: Paleobiodiversity Symposium 2012, Ministry of Environment, 7-33.



Chapter 03

*Biodiversity Research
Classification*

Biodiversity Research Classification

Several more could come in to this classification other than items listed. Some of the subject areas, thematic areas, purpose and sectors are detailed below.

3.1 Subject areas

3.1.1 Size of living organisms and matters:

- Microbiology
- Macrobiology
- Molecular biology

3.1.2. Different levels:

Atomic and molecular level

- Molecular biology
- Biochemistry
- Molecular genetics

Cellular level

- Cell biology
- Physiology
- Immunology
- Neurology
- Anatomy
- Histology
- Embryology
- Morphology
- Cytology
- Biotechnology

Organism level

- Genetics
- Population genetics
- Phylogenetics
- Biophysics/Physiology
- Biotechnology/Biosafety
- Systematics
- Taxonomy
- Parasitology
- Virology
- Microbiology
- Pathology
- Epidemiology
- Fish biology
- Botany
- Zoology

Organism + habitat

- Ecology
- Ecomorphology
- Evolutionary biology
- Embryology
- Development biology
- Ontogeny
- Mammology
- Ornithology
- Herpetology
- Paleontology
- Phylogenetics
- Systematics
- Taxonomy
- Behavioral ecology
- Ethology
- Ethnology
- Bioclimatology
- Biogeography
- Geology
- Limnology
- Estuarine biology
- Marine biology

3.1.3 Cross cutting

- Sociology
- Ecotourism
- Economics
- Bioethics

3.1.4 Technical

- Bio engineering
- Biometry
- Bio sensing
- Biomathematics
- Biostatistics
- Bioenergetics
- Bioinformatics
- Biocomputing
- Geographical Information Systems

3.1.5 Applied biology

- Aquaculture
- Silviculture
- Horticulture
- Sericulture

Mariculture
Mollusc culture
Culture-based fisheries

3.1.6 Life beyond earth

Astrobiology
Eufology

3.2 Thematic Areas

3.2.1 Ex-situ Conservation

3.2.2 In-situ Conservation

3.2.3 Access to Genetic Resources

3.2.4 Traditional and Indigenous Knowledge and Cultural Biodiversity

3.2.5 Impacts on Biodiversity

3.2.6 Sustainable Use and Benefit Sharing

3.2.7 Biosafety

3.2.8 Biodiversity Valuation and Economics of Conservation

3.2.9 Policies, Strategies, and Action Planning

3.2.10 Monitoring and Coordination

3.2.11 Institutional Aspects and Capacity Building

3.2.12 Legal Aspects

3.2.13 Education Awareness and Training

3.2.14 Research, Development and Technology Transfer

3.2.15 Biodiversity Information Management

3.2.16 Agriculture Biodiversity

3.3 Purpose

3.3.1 Academic

3.3.2 Commercial

3.4 Sectors

Biodiversity Research Classification Elaborated

3.1 Subject Area

Some of the subject areas are elaborated below.

Molecular biology

Molecular biology is the study of biology at a molecular level. The field overlaps with other areas of biology, particularly genetics and biochemistry. Molecular biology chiefly concerns itself with understanding the interactions between the various systems of a cell, including the interrelationship of DNA, RNA and protein synthesis and learning how these interactions are regulated (<http://encyclopedia.laborlawtalk.com/molecular%20biology>).

Biochemistry

Biochemistry is the chemistry of life. Biochemistry is focused on the structure and function of cellular components, such as proteins, carbohydrates, lipids, nucleic acids, and other biomolecules. Recently biochemistry has focused more specifically on the chemistry of enzyme-mediated reactions, and on the properties of proteins. Other areas of biochemistry include the genetic code (DNA, RNA), protein synthesis, cell membrane transport, signal transduction and energy decomposition cycles (<http://encyclopedia.laborlawtalk.com/Biochemistry>).

Genetics

Genetics is the science of genes, heredity, and the variation of organisms. Humans began applying knowledge of genetics in prehistory with the domestication and breeding of plants and animals. In modern research, genetics provides important tools in the investigation of the function of a particular gene (<http://encyclopedia.laborlawtalk.com/Genetics>).

Biotechnology

Biotechnology is technology based on biology, especially when used in agriculture, food science, and medicine. According to the Convention on Biological Diversity; Biotechnology is any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

One section of biotechnology is the directed use of organisms for the manufacture of organic products. Biotechnology is also used to recycle, treat waste, clean up sites contaminated by industrial activities (bioremediation), and produce biological weapons.

There are also applications of biotechnology that do not use living organisms; DNA microarrays. Modern biotechnology is often associated with the use of genetically altered microorganisms and it can also refer to transgenic animals or transgenic plants. Another promising new biotechnology application is the development of plant-made pharmaceuticals (<http://encyclopedia.laborlawtalk.com/biotechnology>).

Physiology

A branch of biology that deals with the functions and activities of life or of living matter (as organs, tissues, or cells) and of the physical and chemical phenomena involved; the organic processes and phenomena of an organism or any of its parts or of a particular bodily process (www.colonrectal.org/patientinfo/definitions/definitions.htm).

According to another definition physiology is the study of the mechanical, physical, and biochemical functions of living organisms. Other major branches of scientific study that have grown out of physiology research include biochemistry, biophysics, biomechanics, and pharmacology (<http://encyclopedia.laborlawtalk.com/physiology>).

Taxonomy

Taxonomy may refer to either a hierarchical classification of things, or the principles underlying the classification.

In recent years taxonomic classification has gained support from molecular systematics, a branch of bioinformatics that employs the method of gene sequencing to construct phylogenetic trees (<http://encyclopedia.laborlawtalk.com/taxonomy>).

Systematics

Systematics is the study of the diversity of organism characteristics. In biology, systematists are the scientists who classify species and other taxa, which they do with the aim of defining how they relate evolutionarily (<http://encyclopedia.laborlawtalk.com/Systematics>).

Microbiology

Microbiology is the study of microorganisms, including unicellular (single-celled) eukaryotes and prokaryotes, fungi, and viruses. Today, most of the work in microbiology is done using methods from biochemistry and genetics. It is also related to pathology, immunology, and epidemiology as many microorganisms are pathogens (<http://encyclopedia.laborlawtalk.com/microbiology>).

Parasitology

Parasitology is the study of parasites, their hosts, and the relationship between them. As a biological discipline, the scope of parasitology is not determined by the organism or environment in question, but by their way of life. This means it forms a synthesis of other disciplines, and draws on techniques from fields such as cell biology, bioinformatics, molecular biology, immunology, genetics and ecology (<http://encyclopedia.laborlawtalk.com/parasitology>).

Ecology

Ecology is the branch of science that studies the distribution and abundance of living organisms and the interactions between organisms and their environment. The environment of an organism includes both its physical habitat, which can be described as the sum of local abiotic factors like climate and geology, as well as the other organisms which share its habitat. Ecological systems are studied at several different levels from individuals and populations to ecosystems and biosphere level. Ecology is a multi-disciplinary science, drawing on many other branches of science. In a broader sense, ecology can also mean the natural environment, or an analysis or study using the principles and methods of ecology (<http://encyclopedia.laborlawtalk.com/Ecology>).

Behavioural ecology

Behavioral ecology is the study of the ecological and evolutionary basis for animal behavior, and the roles of behavior in enabling animals to adapt to their ecological niches. Key topics within behavioral ecology include foraging, vigilance, territoriality, mating systems, and sexual selection (http://encyclopedia.laborlawtalk.com/Behavioral_ecology).

Evolutionary biology

Evolutionary biology is a subfield of biology concerned with the origin and descent of species, as well as their change over time, i.e. their evolution (http://encyclopedia.laborlawtalk.com/Evolutionary_biology).

Paleontology

Paleontology is the study of the developing history of life on earth, of ancient plants and animals based on the fossil record, evidence of their existence preserved in rocks. This includes the study of body fossils, tracks, burrows, cast off parts, fossilized feces (coprolites), and chemical residues(<http://encyclopedia.laborlawtalk.com/Paleontology>).

Marine biology

Marine biology is the study of animal and plant life within saltwater ecosystems. Marine biology deals with those species in which life is spent only (or mainly) in the water, thus its classification is based on the environment rather than on taxonomy (http://encyclopedia.laborlawtalk.com/Marine_biology).

Geology

Science dealing with the surface of the earth, its division into continents and countries, along with the climate, animals, plants, inhabitants, resources and industries of the various places (<http://www.peaka-gents.ca/glossary/g3.htm>).

Geography is the scientific study of the locational and spatial variation in both physical and human phenomena on Earth (<http://encyclopedia.laborlawtalk.com/geography>).

Sociology

Sociology is the study of the social lives of humans, groups and societies. (<http://encyclopedia.laborlawtalk.com/sociology>) Environmental sociology is typically defined as the study of societal-environmental interactions, or the relationships between modern societies and their biophysical environments. Environmental sociologists study the factors that cause environmental problems, the societal impacts of those problems, as well as efforts to solve the problems (en.wikipedia.org/wiki/Environmental_sociology).

Economics

Economics is the social science studying production and consumption through measurable variables. It involves analysing the production, distribution and consumption of goods and services. Aspects receiving particular attention in economics are resource allocation, production, distribution, trade, and competition. Economics may in principle be, and increasingly is, applied to any problem that involves choice under scarcity or determining economic value (<http://encyclopedia.laborlawtalk.com/economics>).

Environmental economics is a subfield of economics concerned with environmental issues (<http://encyclopedia.laborlawtalk.com/environmental%20economics>).

Bioinformatics

Bioinformatics or computational biology is the use of mathematical and informational techniques, including statistics, to solve biological problems, usually by creating or using computer programs, mathematical models or both. One of the main areas of bioinformatics is the data mining and analysis of the data gathered by the various genome projects. Other areas are sequence alignment, protein structure prediction, systems biology, protein-protein interactions and virtual evolution (<http://encyclopedia.laborlawtalk.com/Bioinformatics>).

3.2 Thematic Areas

3.2.1 Ex-situ Conservation

Ex-situ conservation or conservation outside the natural habitat is considered important, but carried out very limited in Sri Lanka. Plant Genetic Resources Center is the only institution with facilities for cryo-preservation of germplasm. However, several other institutions manage as best as they can with the limited resources available.

3.2.2 In-situ Conservation

The conservation of biodiversity has to be done mainly within natural habitats that is in-situ. Natural systems can be categorized as forests, inland wetlands, coastal and marine, cultivated systems and landscapes with the crop and livestock species they contain. 73% of recommended actions in the Biodiversity Conservation Action Plan (BCAP, 1999) relevant for insitu conservation has currently being implemented by various institutions as part of their programmes of action and 9% actions have not being commenced due to lack of funds, human resources and coordination. A further eight new recommendations including research has been added to the Addendum of BCAP (Addendum to the BCAP 1999).

3.2.3 Access to Genetic Resources

The issues on the control and access to the genetic resources have become a major concern of many developed and developing countries, particularly important to Sri Lanka as a country having a rich genetic diversity. The Legal Task Force established by the Ministry of Environment and Natural Resources developed recommendations for the access and fair and equitable sharing of benefits arising out of the utilization of genetic resources. It contains the structure and organization of an access and benefit sharing (ABS) mechanism. However, a framework has not been developed yet to initiate or regulate access issues and its benefit sharing system (Addendum to the BCAP 1999).

3.2.4 Traditional Knowledge and Cultural Biodiversity

‘Indigenous knowledge’ is often referred to as traditional knowledge or local knowledge, is embedded in the community and is unique in a given culture, location or society. It is often the basis of local agriculture, health care, food preparation, education, environmental conservation and a host of other spheres in life. With the processes of development and modernization, much of this knowledge had been lost or transformed beyond recognition. Any records of this knowledge are rare and scattered as such knowledge is passed down from generation to generation, usually by word of mouth. It is recognized that, in sustainable development and in the conservation of nature and its riches, traditional wisdom and the life styles of people with minimal demands on natural resources, could perform a vital role (Addendum to the BCAP 1999).

3.2.5 Impacts on Biodiversity

In the past few decades' trends in economic development have threatened the nation's unique indigenous biological wealth. Biological diversity of the country has been reported to have lost at an unprecedented rate due to the mechanism of habitat loss and fragmentation, invasive alien species, over-exploitations/ over-harvesting of resources, pollution of soil, water and atmosphere, desertification, global warming and climate change, industrialization and economic development. In the BCAP addendum gaps were identified and strategies have been proposed to mitigate the threats (Addendum to the BCAP 1999).

3.2.6 Sustainable Use and Benefit Sharing

The use of habitats, ecosystems, plants and animals for livelihood development, food and medicine has been integrated with culture since historical time. The challenge is to seek a balance between the demand for biodiversity utilization with the need to assure sustainability within a framework of ethical principals generally accepted by the people of Sri Lanka. Recommendations for facilitating beneficial use of biodiversity in a manner that is sustainable and ethical has been identified in the Addendum of BCAP (Addendum to the BCAP 1999).

3.2.7 Biosafety

Biosafety is a concept that refers to the need to protect human health and the environment from the possible adverse effects of the products of modern biotechnology. The National Biosafety Framework is a system of legal, technical and administrative mechanisms, mechanism for public participation set in place to address safety in the field of modern biotechnology which includes a policy as well.

3.2.8 Biodiversity Valuation and Economics of Conservation

Biodiversity valuation is an essential methodology in economics that facilitates economic analysis of biodiversity conservation. Specially economics enables identification of economic causes of biodiversity degradation, introduction of economic incentives, mechanisms to finance biodiversity conservation, assessments whether economic and conservation investments are socially worthy and communicating the need to conserve in biodiversity conservation , sustainable use and benefit sharing. In the Addendum of BCAP gaps were identified, and an Action Plan has been provided for the main recommendations (Addendum to the BCAP 1999).

3.2.9 Policies, Strategies, and Action Planning

There is no national biodiversity policy as yet, however, National Environment Policy, National Forestry Policy, National Wildlife Policy, Biodiversity Conservation in Sri Lanka-A Framework for Action, Forestry Sector Master Plan, National Conservation Strategy are some of the policy instruments that have addressed the biodiversity conservation.

3.2.10 Monitoring and Coordination

The need to develop appropriate structures and indicators for monitoring biodiversity components and coordination of action plans are recognized as an integral part of the national implementation of commitments of the Convention on Biological Diversity. Monitoring of biodiversity is carried out through the development and use of indicators covering all the thematic areas and cross cutting issues. Coordination deals with the institutional arrangements necessary for implementation of national programmes and action plans.

3.2.11 Institutional Aspects and Capacity Building

Institutional analysis is considered as a critical first step in the implementation of national biodiversity strategies and action plans to identify institutional impediments, requirements and capacity enhancement. Existing mechanisms includes establishment of the Biodiversity Secretariat (1998), Committees on Environmental policy and management (CEPOMs), and establishment of National Experts Committee (NEC) on Biological Diversity which continues to advise Ministry on matters relating to conservation of biodiversity. A large number of other institutions, non governmental organizations (NGOs), community based organizations (CBOs) and private sector too play a major role in biodiversity conservation. The Addendum of BCAP provides recommendations for institutional aspects and capacity building (Addendum to the BCAP 1999).

3.2.12 Legal Aspects

In Sri Lanka the different laws in force today (around 80) relating to environmental protection many of which directly or indirectly relate to the conservation of species and ecosystems. Despite this large amount of statutes, there are many activities taking place eroding the biological resources of the country. Among many reasons, poor law enforcement, defects and inadequacies in existing laws can be considered as major reasons.

3.2.13 Education Awareness and Training

Lack of awareness in society of the importance and relevance of biological diversity to everyday life is a major constraint which must be overcome to conserve biological diversity. Education and awareness, including the general public should therefore be an integral part of the specific actions and activities carried out under the conservation.

3.2.14 Research, Development and Technology Transfer

The themes of research development and technology transfer are clearly elaborated in the Convention on Biological Diversity(CBD). Article 12 of the CBD highlights the need for research and training related to biodiversity conservation, while Articles 15-19 of the CBD highlights access to genetic resources, equitable use, benefit sharing, sharing of technology (including biotechnology), and international cooperation. The 1999 Biodiversity Conservation Framework for Action has identified some issues related to research on biodiversity and proposed recommendations for action to address the issues. Apart from the 1999 BCAP, the significance and need to promote biodiversity research has also been identified and recommended in other recent national document.

3.2.15 Biodiversity Information Management

Conservation and sustainable use is the response to deter the increasing loss of biodiversity in the world. If programs on conservation and sustainable use are to be effective they should utilize scientific information on three major categories; status of biological resources in the country, Pressure being applied on these resources, Management responses or effectiveness of current policies. Accordingly biological resources management needs cultural, economic and scientific information. In addition, being a party to global and regional treaties information is required to respond to specific and implied requirements of these treaties. Therefore it is necessary to collect, generate and systematically organize complex biodiversity related data which transcends conventional sectoral divisions.

3.2.16 Agriculture Biodiversity

“Variability among living organisms associated with cultivated crops domesticated animals and the ecological complexes of which they are a part” is agricultural biodiversity. It is quite clear that over *the past* several decades the link between agriculture and biodiversity have changed drastically making it obligatory to give high consideration to concerns in agro-biodiversity in the National Biodiversity Conservation Strategy.

3.3 Purpose

3.3.1 Academic

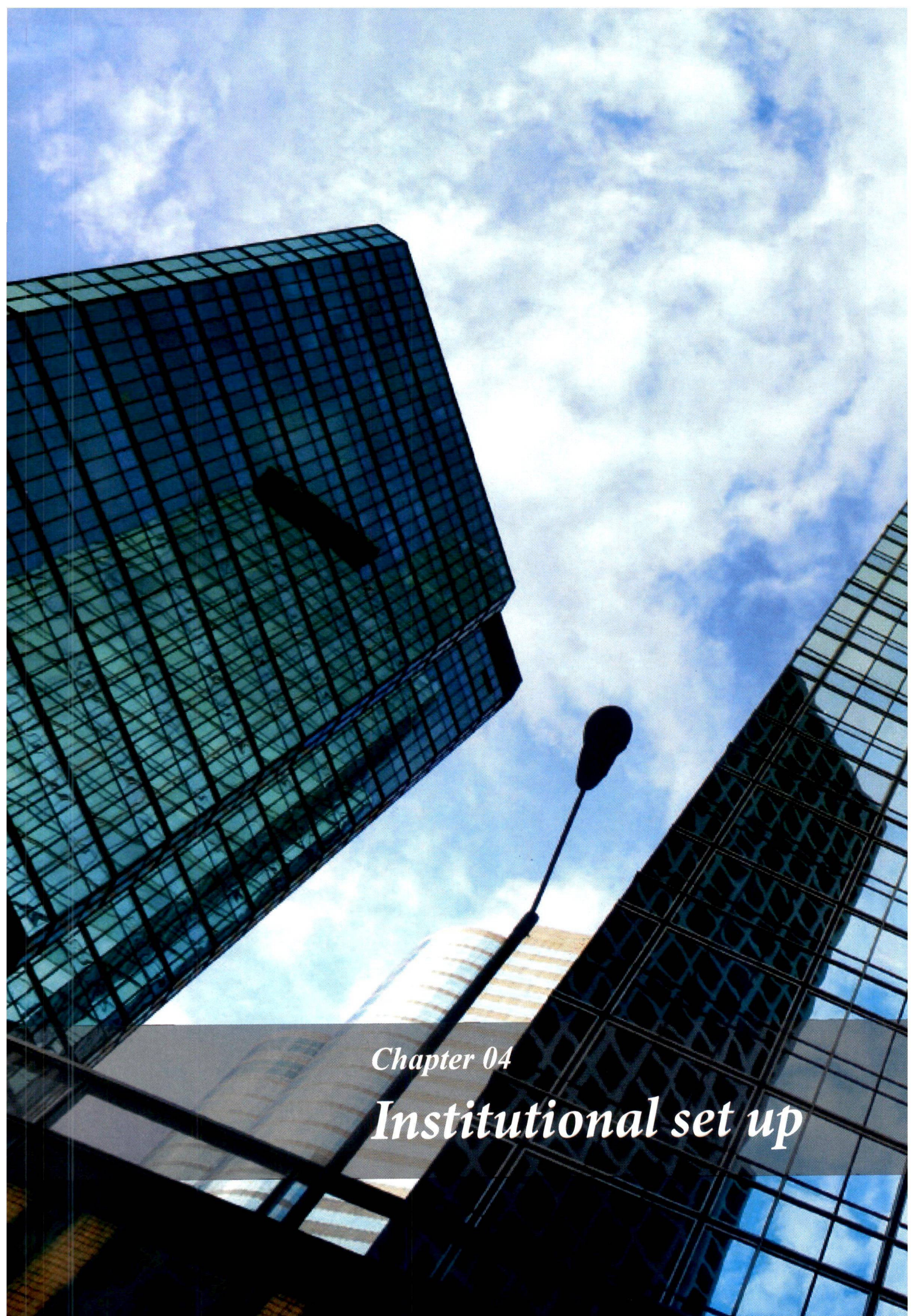
Research with regard to educational purposes and policies, legal, etc. on biodiversity.

3.3.2 Commercial

Research with respect to trade/commercial purposes in agriculture, forestry, fisheries, etc. which includes search for commercially important compounds such as medicinal drugs and others from plant and animal species.

3.4 Sectors

- Agriculture
- Forestry
- Wildlife
- Fisheries & Aquatic Resources
- Health/Medicinal/Veterinary
- Industry



Chapter 04

Institutional set up

Institutional set up

There are several government, semi government, non government and private sector institutions that deal with research on biodiversity; where some institutions, Tea Research Institute, Rice Research Institute, Coconut Research Institute, Rubber Research Institute, Veterinary Research Institute, etc. exclusively deal with research. Universities are well recognized in national research efforts on biodiversity where many research projects are being carried out with foreign collaborations. Even though the existing institutional framework supported and conducted various researches since colonial period, the need for an appropriate institutional framework to coordinate research work on biodiversity conservation, and to collate existing research data have not been recognized.

A Research Section and a National Forestry Research Committee have been established at Forest Department and several measures were adopted to revive the system. However, the institutional capacity for research at the Forest Department, Department of Wildlife Conservation and strengthening the research unit within Central Environment Authority should be done. National Aquatic Research Agency should also be strengthened to take lead role in regular monitoring, research and study of marine and freshwater biodiversity. Researches on bioactive substances derived from biological resources are being conducted by universities, Medical Research Institute, etc. and should be strengthened for access to genetic resources and transfer of technology. The coordinating and monitoring role of the Coast Conservation Department in managing coastal resources, Veterinary Research Institute for genetic characterization of the indigenous animal genetic resources should be strengthened. The Botanical Gardens and Zoological Gardens too carry out research to a limited extent.

Mainly the Council for Agricultural Research Policy, National Science Foundation and projects through several embassies, high commissions and ministries and non governmental organizations to a certain extent fund research on biodiversity.

Research approving agencies are mainly the Forest Department, Department of Wildlife Conservation, Department of Agriculture and Department of Ayurveda.

The human resources capacity and infrastructure in most of the institutions should be build further to develop research, and a strategy should be formulated to communicate or transfer research findings into policy and planning and to the end users of biological diversity. Research priorities should be identified from time to time and disseminated to the relevant institutions. The need for a mechanism to facilitate the development of regional and international co-operation in technical and scientific issues relating to biodiversity is also of prime importance (Addendum to the BCAP 1999).

4.1 Research Conducting Institutions

4.1.1 Government

- ♦ Department of Agriculture (DoA), Peradeniya, Tel: 081 2388331/2/4
- ♦ Botanic Gardens Henarathgoda, Gampaha, Tel: 033 2222316
- ♦ Royal Botanic Gardens Peradeniya, Tel: 081 2388307
- ♦ Botanic Gardens Hakgala, Tel: 052 2222182
- ♦ Field Crop Research & Development Institute, Mahailuppallama, Tel: 025 2249177
- ♦ Fruit Crop Research & Development Center, Horana, Tel: 034 2261323
- ♦ Green Legumes pulse and oil seed research and Development Centre, Angunakolapallasa, Tel: 047 2228336
- ♦ Horticultural Crop Research & Development Institute (HORDI), Gannoruwa, Peradeniya, Tel: 081 2388011
- ♦ Plant Genetic Resources Center (PGRC), Gannoruwa, Peradeniya, Tel: 081 2388494
- ♦ Regional Agricultural Research & Development Center
- ♦ Rice Research & Development Institute (RRDI), Bathalagoda, Tel: 037 2259881
- ♦ Regional Rice Research & Development Centre, Bombuwala
- ♦ Department of Animal Production & Health, 1120, Kandy Road, Peradeniya, Tel: 081 2388462/3
- ♦ Veterinary Research Institute (VRI), Gannoruwa, Peradeniya, Tel: 081 2387375/6/7
- ♦ Department of Ayurveda, Old Kottawa Road, Nawinna, Tel: 011 28960911/2
- ♦ Department of Export Agriculture, 1095, Sirimavo Bandaranayake Mawatha, Peradeniya, Tel: 081 2388651
- ♦ Forest Department (FD), 82, Rajamalwatte Rd, Battaramulla, Tel: 2866631/2
- ♦ Department of National Museums, P O Box 854, Colombo 07, Tel: 2694767/8
- ♦ Department of National Zoological Gardens, Anagarika Dharmapala Mw, Dehiwala, Tel: 011 2712751/3

- ♦ Department of Wildlife Conservation (DWC), 811A, Udyana Mawatha, Sri Jayawardenapura Kotte. Tel: 011 2693532
- ♦ Hector Kobbekaduwa Agrarian Research & Training Institute, 114, Wijerama Mw, Colombo 07, Tel: 011 266437
- ♦ Institute of Indigenous Medicine, Rajagiriya, Tel: 011 2694308
- ♦ Medical Research Institute (MRI)
- ♦ National Aquatic Resources Research & Development Agency (NARA), Crow Island, Mattakkuliya, Tel: 011 2521000/2521006
- ♦ National Building Research Organization (NBRO), 99/1, Jawatta Road, Colombo 05, Tel: 011 2588946
- ♦ National Institute of Plantation Management, P. O. Box 01, M.D.H Jayawardana Mw, Athurugiriya, Tel: 011 2770232

Universities:

- ♦ The Open University of Sri Lanka, 21, Nawala Rd, Nugegoda, Department of Botany, Zoology, Chemistry, physics, Tel: 011 2853777
- ♦ South Eastern University of Sri Lanka, University Park, Oluvil, Faculty of Applied Science, Tel: 067 2260892
- ♦ University of Colombo, 94, Munidasa Kumaratunga Mw, Colombo 03, Department of Zoology Tel: 011 2803399, Dept. of Plant science Tel: 011 2585038.
- ♦ University of Eastern, Vantharumoolai, Chenkaladi, Dept. of Botany Tel: 065 2240757
- ♦ University of Jaffna, Thirunelvely, Jaffna, Faculty of Science Tel: 021 2222483, Dept. of Zoology, Tel: 021 2225925, Dept. of Biochemistry, Tel: 021 2226514
- ♦ University of Kelaniya, Dalugama, Kelaniya, Dept. of Botany, Tel: 011 2914480, Dept. of Microbiology, Tel: 011 2914481, Dept. of Zoology, Tel: 011 2914479, Dept. of Chemistry, Tel: 011 2914486, Dept. of Archaeology, Tel: 011 2908779
- ♦ Post Graduate Institute of Archaeology, 407, Bauddhaloka Mw, Colombo 07, Tel: 011 2673103
- ♦ University of Peradeniya, Peradeniya, Dept. of Soil, Tel: 081 2388354, Dept. of Food science, Tel: 081 2387181, Dept. of Agriculture Biology, Tel: 081 2388375, Dept. Agriculture Economics, Tel: 081 2387177, Dept. of Animal Science, Tel: 081 2387179, Dept. of Crop Science, Tel: 081 2388239

- ♦ Agricultural Biotechnology Centre (AgBC), Tel: 081 2395500
- ♦ University of Rajarata, Mihinthale, Faculty of Applied Science, Tel: 081 2499206
- ♦ University of Ruhuna, Wellamadama, Matara, Tel: 041 2222681, Faculty of Agriculture, Mapalana, Kamburupitiya , Tel: 041 2292200
- ♦ University of Sabaragamuwa, P O Box 02, Belihuloya, Tel: 045 2280087
- ♦ University of Sri Jayawardenepura, Gangodawila, Nugegoda, Dept. of Forestry & Environmental Sciences, Tel: 011 2804685, Dept. of Botany, Tel: 011 2801414, Dept. of Microbiology, Tel: 011 2802026
- ♦ University of Wayamba, Kuliyaipitiya, Tel: 037 2281412, Makadura, Tel: 031 2299430

4.1.2 Semi Government

Bandaranayake Memorial Ayurvedic Research Institute (BMARI), Nawinna, Maharagama, Tel: 011 2850333/02

Coconut Research Institute (CRI), Bandirippuwa, Lunuwila, Tel: 031 2255300

Industrial Development Board, 615, Gall Rd; Katubedda, Moratuwa, Tel: 011 2605323

Industrial Technology Institute (ITI), 363, Baudhaloka Mw, Colombo 07, Tel: 011 2693807

Institute of Fundamental Studies (IFS), HantanaRd; Kandy, Tel: 081 2232002

Mahaweli Authority of Sri Lanka, 500, T.B Jaya Mw, Colombo 10, Tel: 011 2687491

National Science Foundation (NSF), 47/5, Maitland Place, Colombo 07, Tel: 011 2696771/2/3

Ruber Research Institute (RRI), Dartonfield, Agalawatta, Tel: 034 2247426

Sri Lanka Ayurvedic Drugs Cooperation, 94, Old Kottawa Rd, Nawinna, Maharagama, Tel: 011 2850229

Sugarcane Research Institute (SRI), Udawalawa, Tel: 047 2233233

Tea Research Institute (TRI), St. Coombs estate, Thalawakele, Tel: 051 222385

4.1.3 Non Governmental Organization and Other Organizations

IUCN, the World Conservation Union, 53, Hortain Place, Colombo 07, Tel: 011 2694094

International Water Management Institute (IWMI), 127, Sunil Mw, Pallawatta, Battaramulla, Tel: 011 2784080

Young Biologists Association, National Museum, Sir Marcus Fernando Mw, Colombo 07

Young Zoologist Association, National Zoological Garden, Anagarika Dharmapala Mw, Dehiwala

4.2 Research Approving Institutions

- ♦ Department of Agriculture (DoA), Peradeniya, Tel: 081 2388331/2/4
- ♦ Department of Ayurveda, Old Kottawa Rd, Nawenna, Tel: 011 28960911/2
- ♦ Forest Department (FD) 82, Rajamalwatte Rd, Battaramulla, Tel: 2866631/2
- ♦ Department of Wild Life Conservation (DWC) 811A, Udyana Mawatha, Sri Jayawardenapura, Kotte. Tel: 011 2693532
- ♦ Department of Import and Export control, 75-1/3 P O Box 559, 1st floor, Hemas Building, York Street, Colombo 01, Tel: 0112326774-+

4.3 Research Funding Institutions

- ♦ Council for Agricultural Research Policy (CARP), 114/9, Wijerama Mw, Colombo 07 Tel: 011 2697103
- ♦ Embassies and High commissions:
Canada (CIDA), Canadian High Commission 06, Gregory's Rd: Colombo 07, Tel: 011 5226232
- ♦ Germany (GTZ), Embassy of the Federal Republic of Germany, 40, Alfred House Av, Colombo 03, Tel: 011 2580431/40
- ♦ Netherlands, Royal Netherlands Embassy, 25, Torrington Av; Colombo 07, Tel: 011 2596914
Norway (NORAD), Royal Norwegian Embassy, 34, Ward Place, Colombo 07, Tel: 011 2469611
- ♦ United States (USAID), Embassy of United States of America, 210, Galle Rd, Colombo 03, Tel: 011 2448007

- ♦ Global Environmental Facility (small and medium sized grants) (GEF), 202-204, UN Compound, Bauddhaloka Mw, Colombo 07, Tel: 011 2580691
- ♦ IUCN, The World Conservation Union, 53, Hortain Place, Colombo 07, Tel: 011 2694094
- ♦ Ministry of Mahaweli Development and Environment, 82, Rajamalwatte Rd, Battaramulla, Tel: 011 2887454
- ♦ National Science Foundation (NSF) 47/5, Maitland Place, Colombo 07, Tel: 011 2696771/2/3

4.4 Research Publishing

- ♦ IUCN, The World Conservation Union 53, Hortain Place, Colombo 07, Tel: 011 2694094
- ♦ Ministry of Mahaweli Development and Environment, Biodiversity Secretariat, 82, Rajamalwatte Rd, Battaramulla, Tel: 011 2887454
- ♦ Ministry of Technology and Research, No: 408, Galle Road, Colombo 03. Tel :011 2374700
- ♦ National Science Foundation (NSF) 47/5, Maitland Place, Colombo 07, Tel: 011 2696771/2/3
- ♦ Sri Lanka Association for the Advancement of Science (SLAAS), Viddyamandiraya, 120/10, Vidya Mw, Colombo 07, Tel 011 2688740
- ♦ National Aquatic Resources Research & Development Agency (NARA), Crow Island, Mattakkuliya, Tel: 011 2521000/2521006

Universities:

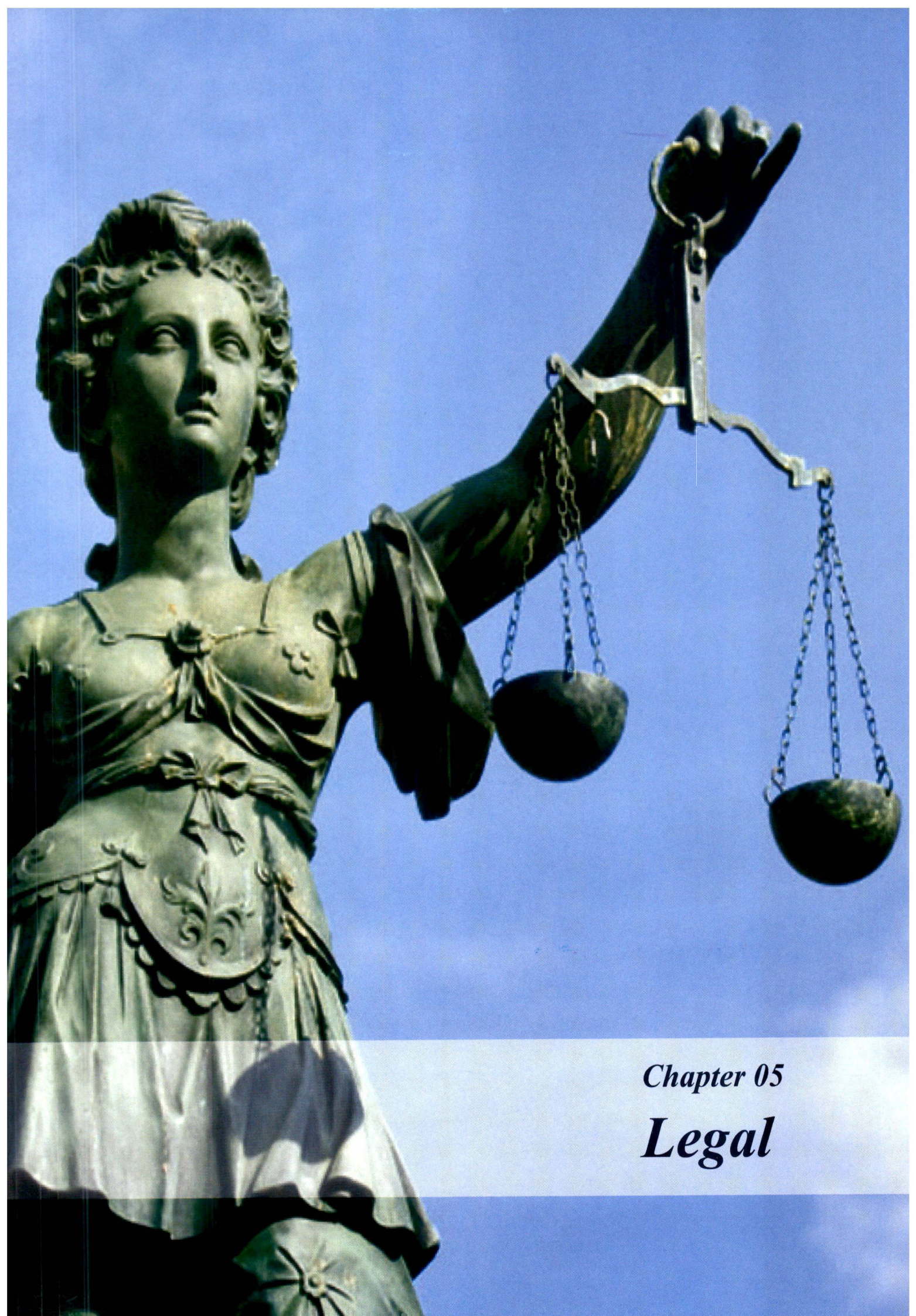
University of Peradeniya, Peradeniya, Tel: 081 2388301

University of Sri Jayawardenepura, Gangodawila, Nugegoda, Tel: 011 280269

University of Kelaniya, Dalugama, Kelaniya, Tel: 11 2903201

4.5 Research Data Management

- ♦ Central Environmental Authority (available data: experts, abstracts, etc.), 104, Parisara Piyasa, Robert Gunawardana Mw, Battaramulla
- ♦ IUCN, The World Conservation Union, 53, Horton Place, Colombo 07, Tel: 011 2694094
- ♦ National Science Foundation (NSF) 47/5, Maitland Place, Colombo 07, Tel: 011 2696771/2/3



Chapter 05

Legal

Legal

5.1 Why

Lack of knowledge on legal procedures regarding research is one of the reasons that hinder research on biological diversity. Several problems arose during recent times when researchers tried to send specimens overseas for research purposes. Inadequate knowledge on application procedure, legal restrictions on certain species, material transfer agreements etc., has led to such problems.

5.2 National legal instruments and provisions for entry into protected areas

- **To enter a protected area for research purposes, permission should be obtained from the Director General, Department of Wildlife Conservation.**
- **To enter a forest reserve, conservation forest, permission should be obtained from the Conservator General of Forest Department.**

Relevant sections of some of the Acts are given below,

5.2.1 Fauna and Flora Protection Ordinance, Act No 49 of 1993

(Section 4, subsection 2 & section 5)

Section 4, sub section 2

- 4 (1) No person shall enter or remain within any strict Nature Reserve except
- (b) Under the authority & in accordance with the conditions of a written permit from the Director General, Department of Wildlife Conservation.
- (2) A permit under subsection (1) (b) shall be issued only for the purpose of authorizing scientific research.

Section 5

- 5 (1) No person shall enter or remain within any National Park except under the authority & in accordance with the conditions of a permit issued by the prescribed officer on payment of the prescribed fee.
- (2) A permit under subsection (1) shall be issued only for the purpose of enabling the permit holder to study or observe the fauna & flora in a National Park.
- (3) If no fee is prescribed for the issue of a permit under subsection (1), such permit shall be issued free of charge.
- 5A (1) No person shall enter or remain within any Nature Reserve or Jungle Corridor except under the authority in accordance with the conditions of a permit issued by the prescribed officer on payment of the prescribed fee.

- (2) If no fee is prescribed for the issue of a permit under subsection (1) , such permit shall be issued free of charge.

5.2.2. National Heritage Wilderness Area , Act No.3 of 1988

(Section 3)

Section 3

- 3(1) No person other than the competent Authority shall enter or remain within any National Heritage Area except:
- (a) For the purpose of discharging any official duty the instruction or with the written permission of the competent Authority or
 - (b) Under the authority & in accordance with the conditions of a written permit from the competent authority
- (2) A permit referred to in paragraph (b) of subsection(1) shall be issued by the competent authority on an application therefore only for the purpose of observing the fauna or flora therein or for conducting such scientific studies as are specified in such permit.

5.3 National legal instruments and provisions for Importation of Specimens

■ Permits should be taken to import,

any animal dead or alive for research purpose

any forest produce/flora/microorganisms for research purpose

any domesticated animal for research purpose

Refer Key 1 + 2: Research with Importation of Specimens

Relevant sections of some of the Acts are given below,

5.3.1 Fauna and Flora Protection Ordinance, Act No 49 of 1993

(Section 37 and 38 (b))

Section 37

37. (1) No person shall import into Sri Lanka any mammal, bird, reptile, amphibian, fish or invertebrate whether dead or alive or any part of any such mammal, bird, reptile, spawn, or lava of any such mammal, bird, spawn or larva of any such mammal, bird, reptile, amphibian, fish or invertebrate except under the authority of a permit issued in the prescribed form obtained from the prescribed officer on payment of the prescribed fee.
- (2) This section shall have effect as if it formed part of the Custom Ordinance and the provisions of that Ordinance shall apply accordingly.
- (3) The provisions of this section shall not apply to any domestic animals as defined in

section 11, or to any tropical aquarium fish.

“Tropical aquarium fish” means any species of fresh water fish specified in Schedule IV.

- (4) In case of doubt or dispute, a certificate purporting to be signed by the Director to the effect that any fish belongs to a species of tropical aquarium fish or that any species of fish is a species of fish is a species of tropical aquarium fish shall be admissible in evidence and shall be prima facie proof of the facts stated therein.

Section 38

Regulations may be made -

- 38.(a) requiring any person who imports any mammal bird, reptile, amphibian, fish or invertebrate on a permit issued under section 37, to provide a certificate from an approved authority that such mammal, bird, reptile, amphibian, fish or invertebrate is free from disease or infection;
- (b) Prohibiting any mammal, bird, reptile, amphibian, fish or invertebrate imported under the authority of a permit issued under section 37, from being liberated or released in any part of Sri Lanka or prescribing any area or areas within which any such mammal, bird, reptile, amphibian, fish or invertebrate may be liberated or released.

5.3.2. Plant Protection Act. No.35 of 1999

Import permits are based on the gazette notification no. 165/2 dated 2.11.1981 and the Plant protection Act No.35 of 1999.

Section 7(6)

7. (6) Notwithstanding the provisions of this act, any quarantine pest or pests declared by Minister under sub section (1), or any plant or plant product infested by such pest or pests may be imported into Sri Lanka strictly for scientific studies by the Government of Sri Lanka after giving notice to the Director- General, under the authority of an import permit issued by the Director General, and in accordance with such conditions including conditions as to the facilities and trained personal for the proper quarantine of the material imported, as may be specified by the Director General.
- (7) The importation of quarantine pest or pests, or plant or plants or plant products infested by such pests under sub-section (6) shall be done only for the use of a government department or a public corporation engaged in scientific research and only if proper facilities including the trained personal specified by the Director General are available in such department or corporation for the containment and quarantine of such pest or pests or such plant products.

5.3.3. Animal Diseases Act No. 59 of 1992

Section 31 (1)

31. (1) The Director shall not recommend the issue of a permit to any person for the import of any veterinary drug or veterinary biological product unless such person

produces to the Director a certificate from the chief veterinary surgeon authorized by him in the country of origin of the product, certifying the safety of such drug or veterinary biological product.

5.4 National legal instruments and provisions for Exportation of Specimens

- **Permits should be taken to export,**
 - any mammals, birds, reptiles, amphibians, fishes, corals and invertebrates whether dead or alive**
 - any forest produce/flora/microorganisms for research purpose**
 - any domesticated animal for research purpose**

Refer Key 1 + 3: Research with Exportation of Specimens

Relevant sections of some the Acts are given below,

5.4.1 Fauna and Flora Protection Ordinance, Act No 49 of 1993 (Section 40)

Section 40

40. (1) No person shall export from Sri Lanka -
- (a) any mammal, bird, reptile, amphibian, fish, coral or invertebrate whether dead or alive or
 - (b) the eggs, feathers or plumage of any bird, the horns, antlers, skin or hide of any mammal or reptile, or any part of any mammal, bird, reptile, amphibian, fish, coral or invertebrate, except under the authority of a permit issued in the prescribed form obtained from the prescribed officer on payment of the prescribed fee.
- (2) Such permit shall not be issued except for the promotion of scientific knowledge including supplies to foreign museums, foreign zoological gardens in exchange for supplies to local museums or local zoological gardens.
- (3) This section shall have effect as if it formed part of the Customs Ordinance, and the provisions of that Ordinance shall apply accordingly.
- (4) The preceding provisions of this section shall not apply to -
- (a) any domestic animal as defined in Section 11 or
 - (b) any mammal, bird, reptile, amphibian, fish, coral or invertebrate of a species which is not indigenous to Sri Lanka.
- (5) In case of doubt or dispute a certificate purporting to be signed by the Director of Museums, Director of the National Zoological Gardens or Director of the National Aquatic Resources Authority to the effect that any mammal, bird, reptile, fish, amphibian, coral or invertebrate belongs to a species which is not indigenous to Sri Lanka or that any species of any mammal, bird, reptile, fish, amphibian, coral or invertebrate is a species not indigenous to Sri Lanka or that any part of any mammal, bird, reptile, fish, amphibian, coral or invertebrate is a part of a mammal, bird, reptile, fish, amphibian, coral or invertebrate of a species which is

not indigenous to Sri Lanka, or that any egg of any reptile, or bird, is the egg of a reptile or bird of a species which is not indigenous to Sri Lanka be admissible in evidence and shall be prima facie proof of the fact stated therein.

(6) Regulations may be made -

- (a) Prescribing the officer who shall have power to inspect prior to its export any item referred to in this section;
- (b) Prescribing the officer who shall have power to seal any such item after such inspection;
- (c) Prescribing the documents to be furnished by the exporter of any such item, in proof of the circumstances under which such exporter obtained possession of such item.

5.4.2. Plant Protection Act No.35 of 1999

Section 12

Minister may make regulations,

- 2. (n) for ensuring the phytosanitary status of the plants, plant products or organisms exported from Sri Lanka.

5.4.3 Fisheries and Aquatic Resources Act No. 2 of 1996

Export and Import of Live Fish Regulations of 1998

- 2.No person shall export any species of live fish set out in Part I of the schedule hereto.
- 3.No person shall,except under the authority of a permit issued to him by the Director of Fisheries and aquatic Resources(here in after referred to as the “Director”) in that behalf export any species of live fish set out in part II of the schedule hereto.
- 4.No person shall import any species of live fish set out in part III of the schedule hereto.
- 10.No person shall except under the authority of a permit issued by the Director in that behalf import or export any live egg,roe or spawn of any fish.

SCHEDULE

Part I

LIST OF SPECIES OF FISH PROHIBITED FROM EXPORT IN LIVE FORM

Marine Fish:

Family - Chaetodontidae

Chaetodon semeion (Bleeker, 1855)

Family - Pomacanthidae

Centropyge bispinosus (Gunther,1860)

Pygoplites dicanthus (Boddert, 1772)

Family - Labridae

Coris aygula (Lacepede, 1801)

Labroides bicolor (Fowler and Bean, 1928)

Family - Scorpaenidae

Pterois radiata (Cuvier, 1829)

Family - Ehippidae

Platax pinnatus (Linnaeus, 1758)

Family - Serranidae

Ephinephelus lanceolatus (Bloch, 1790)

Ephinephelus flavocaeruleus (Lacepede, 1802)

Family - Haemulidae

Plectorhynchus obscurum

Plectorhynchus albobittatus (Ruppel, 1835)

Family - Pomacentridae

Chrysiptera kuiteri (Allan and Rajasuriya, 1995)

Freshwater Fish

Family : Cyprinidae

Labeo fisheri Jorden and Starks, 1917

Labeo porcellus (Heckel, 1838)

Puntius asoka Kottelat and Pethiyagoda, 1989

Puntius martenstyni Kottelat and Pethiyagoda, 1991

Puntius srilankensis (Senanayake, 1985)

Puntius bandula Kottelat and Pethiyagoda, 1991

Rasbora wilpita Kottelat and Pethiyagoda, 1991

Malpulutta kretseri Deraniyagala, 1937

Family : Gobidae

Schismatogobius deraniyagalai Kottelat and Pethiyagoda, 1989

Sicyopterus halei (Day, 1888)

Sicyopus jonklaasi Klauswitz and Henrich, 1986

Channa orientalis Bloch and Schneider, 1801

Family - Cobitidae

Lepidocephalichthys jonklaasi Deraniyagala, 1956

Part II

LIST OF SPECIES OF FISH RESTRICTED FROM EXPORT IN LIVE FORM

Marine Fish

Family : Chaetodontidae

Chaetodon octofaciatus Bloch, 1787

Chaetodon ornatissimus Cuvier, 1831

Chaetodon falcula Bloch, 1793

Chaetodon xanthocephalus Bennet, 1832

Chaetodon ephippium Cuvier, 1831

Chaetodon unimaculatus Bloch, 1787

Chaetodon madagascariensis Ahl, 1923

Chaetodon benetti Cuvier, 1831

Chaetodon meyeri Bloch and Schneider, 1801

Chaetodon triangulum Cuvier, 1831

Heniochus monoceros (Cuvier, 1831)

Heniochus pleurotaenia (Cuvier, 1831)

Family : Pomacanthidae

Centropyge flavipectoralis (Randall and Klauswitz, 1977)

Family: Balistidae

Balistoides conspicillum (Bloch and Schneider, 1801)

Pseudobalistes fuscus (Bloch and Schneider, 1801)

Family: Serranidae

Variola louti (Forsk., 1775)

Variola albimarginata (Baissac, 1952)

Freshwater Fish

Family: Cyprinidae

Danio patirana Kottelat and Pethiyagoda, 1990

Puntius cumingii (Gunther, 1868)

Puntius nigrofasciatus (Gunther, 1868)

Puntius titteya Deraniyagala, 1930

Rasbora vaterifloris Deraniyagala, 1930

Family: Claridae

Clarias brachysoma Gunther, 1864

Family: Belontiidae

Belontia signata (Gunther, 1861)

Family: Mastacembelidae

Macroganthus aral Lecepede, 1803

Family: Centropomidae

Lates calcarifer (Bloch, 1796)

Part III

LIST OF FISH PROHIBITED FROM IMPORT IN LIVE FORM

Freshwater Fish

Family : Ictaluridae

Ictalurus punctatus

Ictalurus forcatus

Ictalurus catus

Ictalurus nebulosus

Pylodictis olivaris

Family : Characidae

Serrasalmus nattereri

Serrasalmus hollandi

Serrasalmus eigenmani

Serrasalmus notatus

Serrasalmus striolatus

Serrasalmus elongatus

Serrasalmus gibbus

Serrasalmus sanchezi

Serrasalmus spilopleura

Serrasalmus antoni

Serrasalmus rhombeus

Serrasalmus serrulatus

Catoprion mento

Family : Notopteridae

Notopterus notopterus

Notopterus chitala

Notopterus afer

Notopterus blanci

Chitala blanci

Chitala ornate

5.5 Legal procedure and application procedure

5.5.1 Department of Wildlife Conservation (DWC)

Guidelines and general conditions, sample application form (annex 01) and a brief summary for research on wildlife resources under Department of Wild Life is given below,

Guidelines & General Conditions for Research on Wildlife Resources

The Department of Wildlife Conservation recognized the importance of research & will always encourage research pertaining to wildlife conservation & management. Priority will be given to research, which addresses management problems in the conservation of wildlife in Sri Lanka.

1. Submission of Research Proposals

- 1.1 The principle investigator(s) of the research project(s) must be working in or in collaboration with a recognized scientific institution & the proposal must be recommended by the head of the institution.
- 1.2 Foreign researchers should always submit the proposal through the head of their institute & collaborate with a local institute or the research division of DWC. Project proposal should be approved & endorsed by the head of the local collaborating institute.
- 1.3 All the research proposals submitted for approval should reach Director - DWC's office at least two months ahead the date that project activities are proposed to be commenced. Proposals for long term, intensive research proposals may take at least four-(4) months for scrutiny.
- 1.4 Project proposal should accompany the duly completed format obtained from DWC, which would enable the DWC to process the application for the approval. This should include information such as bio-data of the researchers, details of the faunal & floral specimens supposed to be collected & the work schedule.
- 1.5 Researcher/s involved in the research should convincingly demonstrate the evidence of competence to conduct research.

2. Project Approval (PA)

- 2.1 All the project proposals for long term, intensive studies will be referred to the Research Committee appointed by Director DWC for scrutiny & recommendations for approval.
- 2.2 Approval will be granted only on strict observation of legal provisions of the Fauna & Flora

Protection Ordinance & other relevant legislations.

- 2.3 Applicants should provide for any further clarifications & should accept suggestions for alterations in the project proposal, in order to regularize the same before the approval is granted.
- 2.4 Prior approval should be taken for any changes in the project procedure, or personnel involved in the research.
- 2.5 In the case of long term research proposals initial approval for research proposals will be limited to a maximum period of one year from the date granted. Further extensions to the project period are subjected to the satisfactory review of the project activities.
- 2.6 Director DWC reserves the right to revoke the approval without prior notice at any stage of the research.
- 2.7 Number of research studies permitted at a time within sensitive areas (eg: Horton Plains NP) would be limited with the intension of minimizing the impact on environment.

3. Collection of Specimens & capture of live animals

- 3.1 Collection of faunal & floral specimens from PAs should be avoided unless it is extremely necessary.
- 3.2 Capture & collection of specimens of rare, endangered, threatened, status unknown or undescribed species should be restricted to less than 3 specimens. If more specimens are required special permission should be sort.
- 3.3 Standard capture methods should be used & every precaution should be taken to prevent any harm or injuries when capture of live animals is necessary.
- 3.4 Records of the number & other information of the specimens collected should be maintained properly & forwarded to the department.
- 3.5 In the case of long-term research proposals biannual return of specimens collected & animals captured together with progress reports should be furnished to the department.
- 3.6 Specimens to be exported for identification purposes should be declared to the department & necessary export permits be obtained prior to such export.

4. Research Monitoring

- 4.1 Activities of the research project within PAs should be carried out under the close collaboration with wildlife officers responsible for the management of respective PAs.
- 4.2 Details of the research activities & other information such as names & identity of the persons involved, areas to be visited, number of specimens collected & animals aptured should be notified to the PA authority.
- 4.3 Where appropriate. Director DWC will nominate wildlife officer to collaborate with research. DWC should be duly acknowledged in the reports published.

5. General Conditions

- 5.1 Prior permission should be taken if any filming within PAs is required.
- 5.2 Researchers should be willing to present the data & findings of the research to the
- 5.3 DWC staff in the form of a lecture when requested.

Two copies of the final report of the research & any audiovisuals produced should be

made available to the libraries of the department.

5.4 DWC is not responsible for any form of damage to any property or life that might occur during the study period or thereafter.

Conditions for Research

1. The project is subject to the rules & regulations of the Fauna & Flora Protection Ordinance.
2. The detailed research proposal along with the bio-data of the persons involved should be submitted to the Department of Wildlife Conservation at least two weeks in advance.
3. The foreign researchers should collaborate with a local recognized institution.
4. The research proposal should be open for discussions & alterations.
5. Permission should be taken to conduct field activities during the night or erect temporary huts/tents, enclosures etc.
6. This venture is only for the research & education & not for the any commercial purpose which include the prohibition of issuing tickets, permits or the charging of any fees for viewing of research site or animals etc.
7. Permission should be obtained for import & export of specimens if identification facilities are not available in Sri Lanka.
8. Dead specimens should be forwarded to the DWC before disposal.
9. The Project should be available for supervision, inspection & monitoring for DWC officials at any time.
10. Live specimens cannot be killed for any purpose without the permission of the Director General, DWC.
11. Maintenance of proper scientific data is required.
12. A separate approval should be taken for capture of animals from the wild or else where.
13. The Director General DWC has the authority to nominate any officer for inspection of the project at any time without any notification.
14. Project procedure, project personnel or location cannot be changed without informing the Director General, DWC.
15. For the first six months a brief progress report of the project should be submitted to the DWLC monthly, after 6 months progress reports should be submitted every 3 months & an annual report of the project should be submitted to the DWC for consideration of the extension of the above project.
16. A copy of the final report should be sent to the library, Department of Wildlife Conservation.
17. The department is not responsible for any kind of damage to property or life at any stage of the project.
18. The project should be carried out in collaboration with the DWC.
19. Director /DWC has the right to revocation, alteration or cancellation of the authorization at any time without prior notice.
20. The initial duration of the project should be one year & after one year the director /DWC upon receiving the progress reports will decide the extension of the project.
21. For filming a separate permission should be taken from the department.
22. DWC officers involved in the research should be co-authors of publications, if any.

- 23. Researchers should deliver a seminar/lecture on research project, if requested by the DWC.
- 24. DWC officers should be trained on field techniques/identification/methodology etc., adopted by the researcher.

If the research includes collection of samples

- 25. A list of already curated specimens for research purposes should be forwarded to the DWC.
- 26. Species already collected should not be collected again.
- 27. Not more than 3 specimens per species should be taken to identify the specimen up to generic level & only 3 samples should be collected for this purpose.
- 28. Area to be visited for the fieldwork should be notified to the department at least two weeks ahead.
- 29. Sampling inside National Parks Should be done under supervision of an officer nominated by the DWC.
- 30. An Assistant Director/ Park Warden or Ranger in charge should certify all collected specimens.
- 31. Permission should be renewed every three months if the research includes collecting floral or faunal specimens.

Director
Dept. of Wildlife Conservation

Date.....

I / We accept the above conditions & agree to abide by the same.

Name of the principle researcher: _____

Institute: _____

NIC/Passport No: _____

Signature of applicant: _____ Date _____

Name of Local Researcher: _____

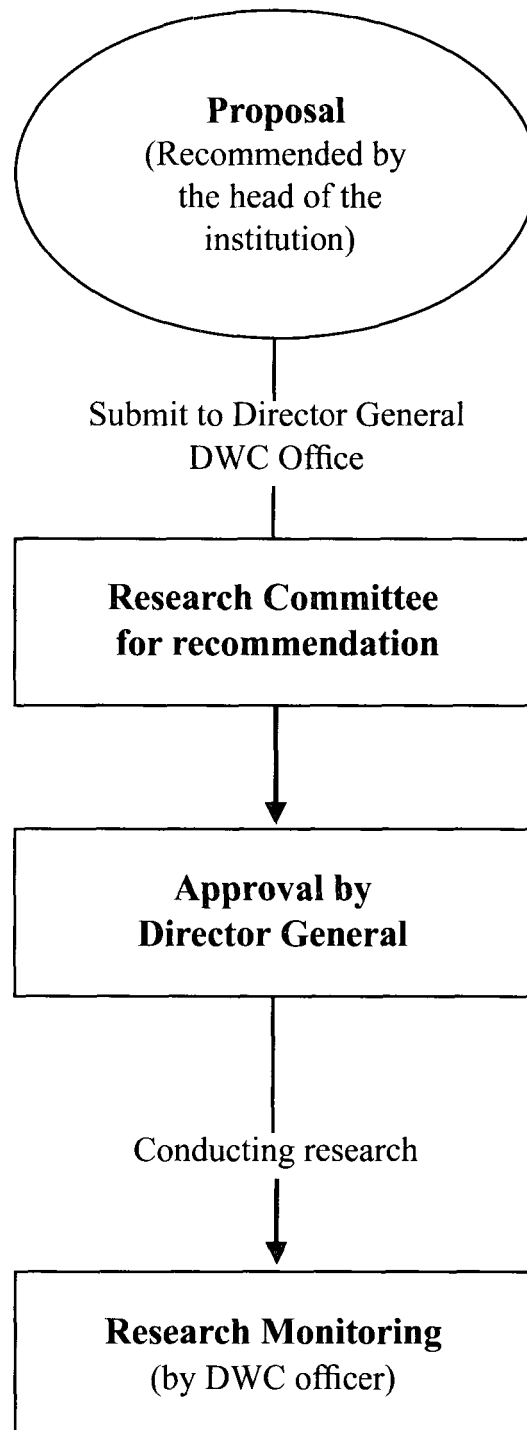
Institute: _____

NIC No: _____

Signature of Local Researcher: _____ Date _____

Brief Summary of Research Procedure

Department of Wildlife Conservation



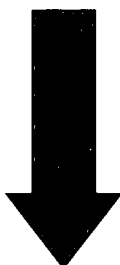
Collection of Specimens and capture of live animals

Rare, Endangered, Threatened, Status unknown or undescribed species



Should be restricted to LESS than 03specimens

Exportation of specimens



Obtaining permits from DWC prior to export
(For Fishes, Permit should be obtained from the Director/Fisheries)

5.5.2 Forest Department

General conditions, sample application form (annex 02) and a brief summary for research on forest resources under Forest Department is given below:

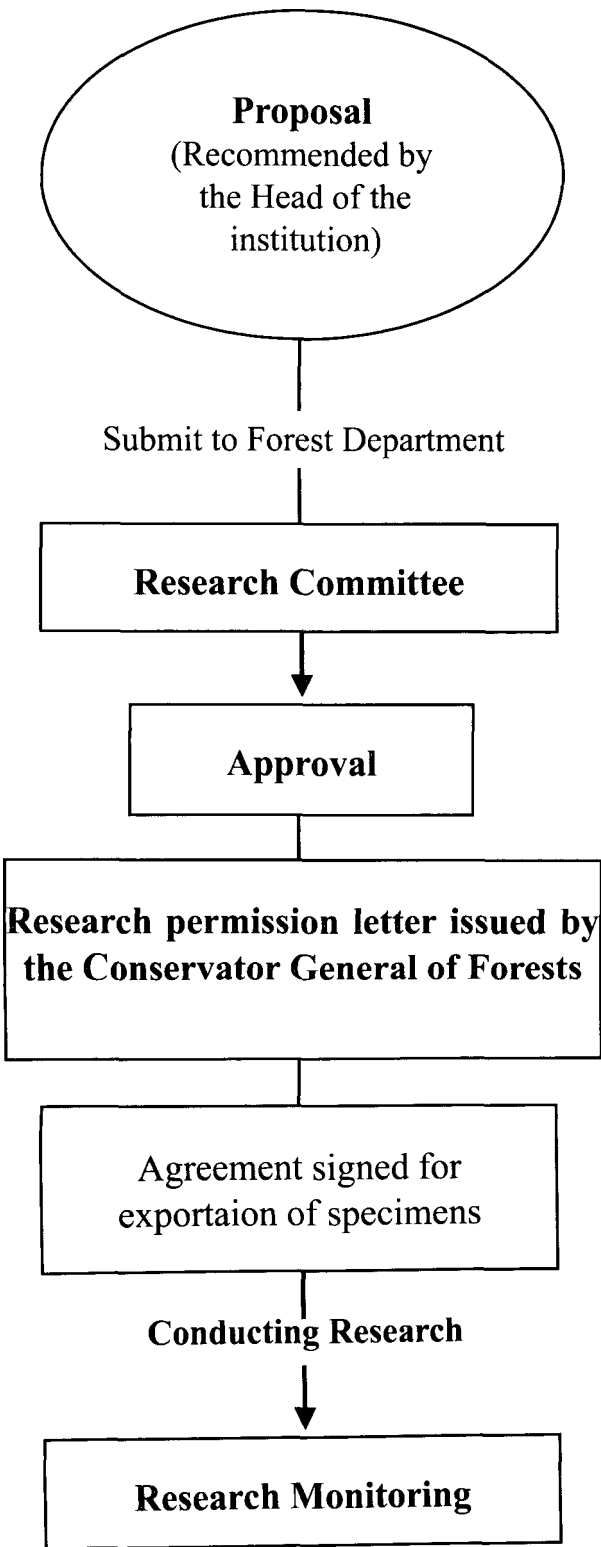
General Conditions for Research Proposals

1. All research proposals must have the approval of the research committee.
2. The principal investigator(s) of the Research Project(s) must be working in or affiliated to a recognized scientific institution and the proposal has to be recommended by the head of such an institution before consideration by the Research Committee.
3. In the case of foreign researchers they should submit their proposals through the head of their institution & should have a local professional counterpart from a recognized research institution as co-investigator. A letter of consent from the local professional counterpart to the effect that he/she will be collaborating with the foreign institution has to be submitted.
4. Research proposals which are accepted will be governed by the rules and conditions as given in the Research Permission Letter issued by the Conservator General of Forests or his representative.

5. Research proposals will be evaluated giving due consideration to the relevance of such proposals to research priorities identified by the Research Committee.

Brief Summary of Research Procedure

Forest Department



5.5.3 Department of Agriculture (DOA)

General procedure for importation of plants and plant products under DOA is given below. Application form for a permit to import; planting material, seeds and plant products, soil, organism, information required for quarantine clearance, permit to import; plants, fresh fruit, application for a phytosanitary certificate, and phytosanitary certificate for re-export are provided in their web site. For exportation of plants and plant products an application to be forwarded to National Plant Quarantine Service and a phytosanitary certificate to be obtained.

General Procedure for Import of Plants and Plant Products

1. Forms of plant materials for import

Pollen, in vitro culture, seed, seedling, fruits, unrooted cuttings, rhizomes, corms, bulbs, recently rooted cuttings, and long established plants. Remember genetically modified organisms (GMOs) and living modified organisms (LMOs) are not allowed to import into Sri Lanka.

2. Purpose of imports

As mother stock; multiplication and export; cut flower production; ornamental purposes; grower's interest; processing; consumption; sale, etc.

3. Facilities needed to handle the imported materials

Isolated fields, screen houses, net houses or suitable storage facilities as the case may be.

Application for Permits

4. Procedure

Apply for a plant import permit giving necessary details in the prescribed application form. Submit the application either Director (Seed Certification & Plant Protection), P.O. Box, 74 No. 1, Sarasavi Mawatha, Peradeniya, Phone: 08-388877, 08-388044, Fax: 08- 388077 E-mail: scppc@sltnet.lk Or to Deputy Director (Plant Quarantine) National Plant Quarantine Service, Canada Friendship Road, Katunayaka, Phone: 01-252028, 01-252029 Fax: 01- 253709 E-mail: npqs@sltnet.lk

5. Give exact identity of the material to be imported

For fruits & vegetables imported for consumption, the common name is sufficient.

In the case of all other plant materials (including seeds), the botanical name of the plant should be given. The botanical name is the scientific name in Latin that facilitates a precise identification of the plant species. It has two components:

- (a) Generic name - starting with the capital.
- (b) Specific epithet - The second name starting with the simple letter.

The botanical name is usually printed or typed in italics or underlined, e.g. *Zea mays* (*Zea Mays*) is the botanical name for maize or corn. The name of a 'Horticultural sport', 'Cultivar' ('variety') or

‘Hybrid’ should be written within single quotation marks with a capital initial letter after the specific name. For example, *Dracaena* ‘Massangeana’ (or *Dracaena* ‘Massangeana’) should not be referred to as Massangeana in the application. For the import of vegetable seeds, both the botanical name and the common name (i.e. accepted English name) with the name of variety, strain and/or hybrid should be given.

6. Specify clearly the quantity and the material

Quantities of each of the material should be mentioned in the application form. The material you wish to import may be fruits, seeds, seedlings, rooted cuttings, unrooted cuttings, rhizomes, bulbs, corms, in vitro cultures, whole plants etc.

In the case of import of vegetable seeds, packaging volume should also be given. Special conditions applicable for import of fruits and vegetables are given on the back the application form.

Most tissue-cultured products are permitted provided they arrive as in vitro cultures in sealed vessels made of clear glass or plastic and containing clear growth media that should not contain any antibiotics or charcoal.

7. Certain plants are not permitted but their seeds are allowed. Seeds or seedlings of all palms are not allowed.

8. Indicate the following in the appropriate places in the application form

- Name and address of the supplier.
- Intended use or purpose.
- Locality and country where the material was produced.
- Means of importation (whether air freight, sea freight, air mail, accompanied baggage, etc.).
- Probable dates of shipment and entry into Sri Lanka.
- Port of entry.

9. Where importers wish to test materials by themselves or at appropriate institutes, adequate descriptions of the varieties should be submitted as requested by the institutes.

How DOA will act on Permit Applications

10. Processing of application

All applications will be processed within two weeks of receipt.

11. Reasons for any delay

Issue of permits may be delayed when the application is incomplete.

For the issue of permits to import some items, inspection of the facilities available with the importer may be a prerequisite and the importer will be notified about such requirements.

12. Reasons for refusal of permits

If the material requested is an item prohibited for import into Sri Lanka, Plant Import Per-

mit will not be issued unless the applicant is qualified for importation of such material.

13. Issue of the Plant Import Permits

Permits will be issued without restriction for those vegetable seeds that are in the approved list. This list will be published periodically in the newspapers.

Permit may contain the information on the conditions of entry and the period of validity.

Importer shall take every step to fulfill the conditions imposed.

How the material should arrive in Sri Lanka

14. Packaging and labeling

The consignment must be securely packaged to prevent spillage in transit.

Every package must bear information on the name of the plant, (including the name of the variety) and treatment, if any, name and address of supplier, name and address of consignee, permit number and the numbers of certificates covering of the consignment.

15. Packing material

Packing materials should be those approved by the Department of Agriculture.

16. Soil is prohibited

A consignment should not contain any soil (as a contaminate or as a growth medium).

Certification Needed

17. The importer must obtain, where appropriate, following certification on the consignment.

- i. A phytosanitary certificate issued within 14 days prior to dispatch. This certificate must conform to the model set out by the International Plant Protection Convention. It should be issued by a duly authorized officer of the official plant protection organization of the country of origin /or export. It should contain declarations, and additional declarations if the entry onditions require such declarations.
- ii. Declaration stating that consignment is free of soil.
- iii. Certificate of origin must be obtained from a relevant authority (Chamber of Commerce of the exporting country).
- iv. Packing list.
- v. Bill of lading.
- vi. Phytosanitary certificate for re-export.
- vii. Importers of fresh fruits and vegetables for consumption must obtain a certificate from the plant protection authority of the country of production of fruits stating that the fruits have been in cold storage below 0°C for more than two weeks. A certificate from the master of the ship could be acceptable if pre-cooling is done on the board the shipen-route to Sri Lanka. How ever, certificates are not accepted from countries where fruit flies (Family: Tephritidae) not recorded in Sri Lanka are known to occur unless the fruits and vegetables have treated in a manner approved by the Director of Agriculture in order to kill all fruit fly larvae.

These must be produced on request by the officer of the Department of Agriculture.

Responsibility of the Importer

18. Procedure followed by the importer

On arrival of the consignment, the importer should provide the details of the importer to the Plant Quarantine Officer at the port of entry (in case of the consignment received at the General Post Office the Plant Quarantine Inspector at the Sea port Colombo), who will give necessary advice for clearance.

Plant import entry form could be used for this purpose.

Submit the originals of the certificates mentioned in 18 above to the Plant Quarantine Officer

Procedure followed by DOA on arrival of the consignment

19. Inspection of the material and the certificates

The consignment shall be inspected by a Plant Quarantine Officer and or a representative from the Seed Certification and Plant Protection Center of the Department of Agriculture. They will take samples for testing.

20. Prescription of any treatments

If deemed necessary by the Plant Quarantine Officer, the consignment shall be subjected to treatment or other suitable method of disposal. This will be dependent on the pest infestations detected in the consignment.

21. Testing of the material

In some instances, the imported material will be subjected to tests to ascertain the pest infestations. If the importer wishes to test the material, then such tests should be open to specialist officers whose observations will be considered for recommendation.

22. Denial of entry into Sri Lanka of the consignment

Entry into Sri Lanka may be denied to any consignment plant materials,

(a) Which has been imported without the certifications mentioned above or

(b) Which, in the opinion of the Plant Quarantine Inspector, carries a dangerous pathogen, weed, insect or any ? other dangerous organism (pest).

Post-entry quarantine

23. For some imported material, post-entry quarantine screening will be required.

In such case, the importer should have adequate facilities.

What you cannot import

24. The Regulations made under the Plant Protection Act (Gazette Extraordinary of the Democratic Socialist Republic of Sri Lanka, No. 165/2, of Monday, November 20, 1981) lists prohibited/restricted plants.

Permits to import prohibited plants will be given only to appropriate research institutes of Sri Lanka.

25. Direct import of any plant, plant material, plant product or seed from TROPICAL

AMERICA are prohibited for fear of introduction of the extremely dangerous South American Leaf blight (SALB) pathogen of rubber.

26. Import of soil is prohibited.

5.5.4 Ministry of Mahaweli Development & Environment

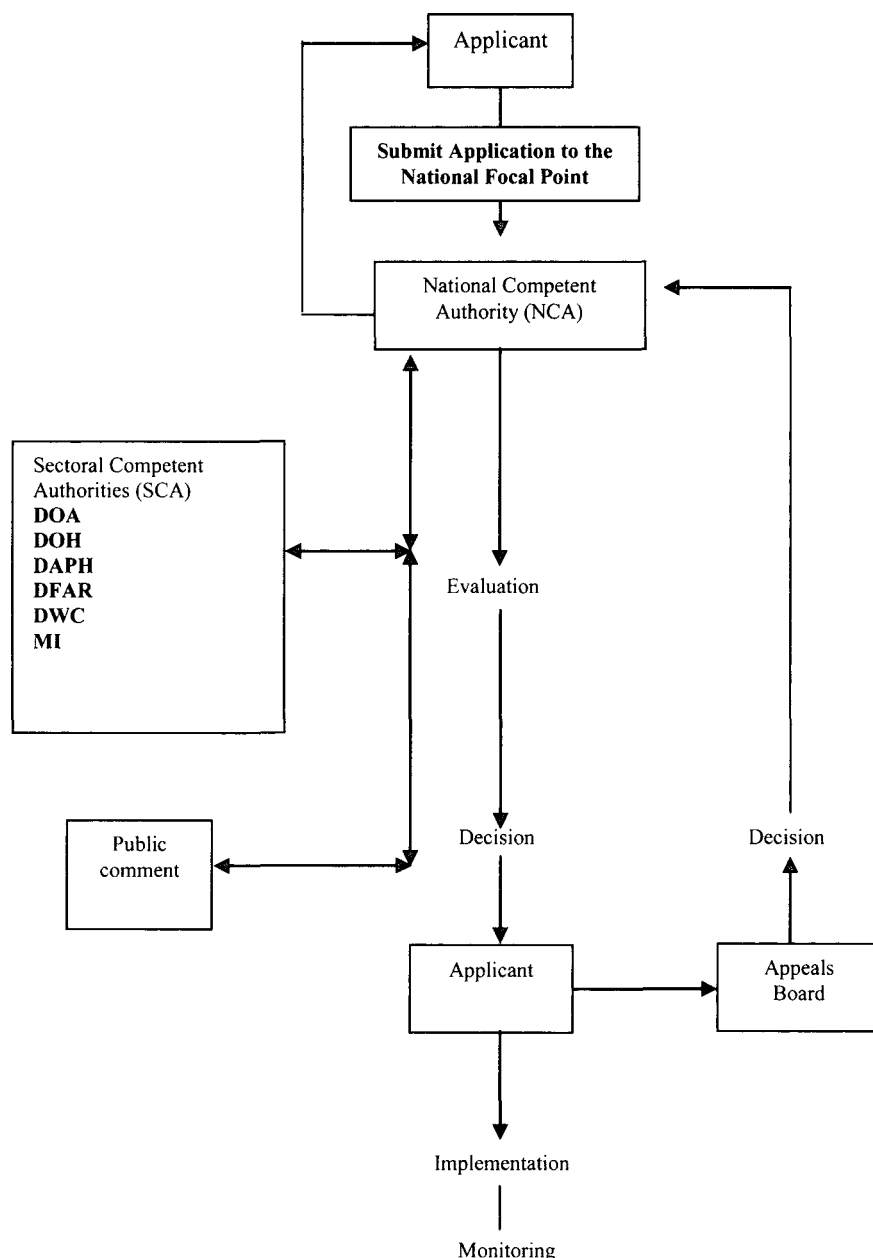
Ministry responsible for the subject of Environment is the National Focal Point (NFP) for the Cartagena Protocol on Biosafety and the controlling authority for all issues relating to biosafety in Sri Lanka. These aspects are more emphasized by the National Policy on Biosafety adopted in year 2005.

Procedure for handling applications for importation, release to environment, or placing on the market of Genetically Modified Organisms (GMOs)/Living Modified Organisms (LMOs) and their products is outlined in below table.

Stepwise procedure for handling applications

Application (or, request or notification) consists of a letter signed by the legal person who submits the request and an accompanying dossier. ↓ Recorded and assigned a tracking number ↓ Screening for completeness (administrative and technical information) If not complete – additional information requested from applicant ↓ Inform applicant that request complies with requirements. ↓ The request and any accompanying information is sent to an expert/ advisory body/ies and/or other involved institutions for risk assessment of the proposed activity. Risk Assessment: Is the identified risk acceptable/ manageable? Risk management strategies ↓ Summary or conclusion i.e. type of risks, risk management strategies proposed (if any), any potential beneficial effects on human health or environment. ↓ Competent authority for decision. ↓ Monitoring and inspection: After permit or consent is given and the activity has started, usually a system of “monitoring and inspection” begins.	Time period may start either at the time of receipt ,or at time of acknowledgement of completeness Additional information can also be requested at any time during the process In some countries, the request is publicly announced, and made available to the public. In other countries, requests are only made available together with the draft decision. Most decision documents contain the following elements – summary of the application, description of the procedure followed, summary of the risk assessment and the final decision Monitoring is normally carried out by the person responsible for the activity; inspection is typically done by the government. Purpose of inspections is to ensure compliance with the conditions set in decision documents or permits.
---	--

APPLICATION & REVIEW PROCEDURES



Note: DWC-Department of Wildlife Conservation; DAPH-Department of Animal Production and Health; DOA-Department of Agriculture; DH-Department of Health; MI-Ministry of Industries; DFAR-Department of Fisheries and Aquatic Resources.

Guidelines for the production of Genetically Modified Organisms:

- 1 Before any experiment on organisms is undertaken, the principal investigator or project manager should prepare a proposal according to the format set by the NFP. The Proposal should respond to all items indicated in the Procedures for Evaluation.
- 2 The proposal should then be submitted to the NFP. The NFP should assess the project initially and then send the original proposal with its own evaluation, to the relevant competent authorities for assessment.
- 3 Genetic manipulation of organisms should be allowed only if the ultimate objective is for the welfare of humanity and the natural environment and only if it has been clearly demonstrated that there is no existing or foreseeable alternative approaches to servicing the

- welfare of humanity and the natural environment.
- 4 Assessment of risk should be based on the characteristics of the biological product and on the process by which it was obtained.
 - 5 Upon receipt of proposal, the competent authority will form a working group, members of which may be from the authority itself, who will assess the proposal based on the Procedures for Evaluation. This working group may seek additional requirements either in elaboration of the proposal or on new issues that may arise from an examination of the proposal. The working group shall submit its recommendations to the NFP.
 - 6 Approval or denial of an import permit shall be based on the information provided for evaluation as formulated in Annex II of National Biosafety Framework (NBF).

Application to obtain permits for the production and introduction of Genetically Modified Organisms and products should include the following information

1. Title of the project
2. Program/Project/Study Leader(s)
3. Name of Institution
4. Cooperating Institution(s)
5. Objectives of the Genetic modification
6. Materials and Methods
 - 6.1 Degree of Genetic Manipulation
 - 6.2 Methodology/Protocol (including timetable of activities)
 - 6.3 Location of Experiment
 - 6.4 Characteristics of the Organisms: (Plants, Animals, Microorganisms)

(Local strains; Collected within the region (mention exact location); Collected from other regions - origin of strains; Imported strains (indicate point of origin); Not present in the country; Present but of restricted distribution in the country; Widely distributed in the country; Genetically modified strains; Ecological context)
 - 6.5 For Experiments Involving Genetically Modified Plants
 - Characteristics of the recipient organism
(nomenclature; the areas of cultivation or distribution in nature; reproductive cycle; possibility of natural crossing to related species; production of toxic substances, if any; weediness/effect on environment (soil, water, etc.).
 - Characteristics of donor organism
(taxonomy; the areas of cultivation, distribution in nature; reproductive cycle; possibility of natural crossing to related species; production of toxic substances, if any; weediness/effect on environment; functions of the target gene)
 - Name, designation, origin and molecular characteristics of the vector
 - Construction method of the genetically modified organism
 - Structure and construction method of the recombinant molecule
 - Method to introduce target genes into recipient cells
 - Characteristics of genetically modified organism
 - Comparison with recipient organisms
 - Localization, copy number and stability of the target gene in recipient cell
 - Stability of the introduced gene expression
 - Any other important points obtained in the transformation experiment to develop the genetically modified plant

- Specify if any member of the genus of the modified plant is known to be harboring pests or diseases
- Indicate if the experimental plot is isolated from plants of the same species, with regard to the pollination characteristics of the plant
- Provide data on any previous information on risk assessment of the organism
- Provide data on any markers available to track the organism if it escapes.

6.6 For Experiments Involving Genetically Microorganisms

- Characteristics of the recipient organism
(Nomenclature (scientific name and strain); Genetic properties (Characteristics); History of prior genetic manipulation, if any; Factors which might limit the reproduction, growth and survival of the recipient organisms; stability of genetic traits; Characteristics and stability of plasmids, phages, viruses, in the recipient organisms; Reproductive cycle (sexual or asexual); Pathogenicity (details and availability of appropriate prophylaxis and therapies, if any); Production of biological active compounds, if any; Adventitious agents; Previous reports of a history of industrial use, if any; Characteristics of the related strain of recipient organisms; Natural habitat and geographic distribution; Genetic traits; Characteristics and stability of plasmids, phages, viruses, in the recipient organisms).
- Characteristics of the donor organism
(Nomenclature (scientific name and strain); Pathogenicity, producibility of biological active compounds; Functions of the objective genes).
- Name, designation, origin, characteristics of the vector
- Construction method of genetically modified organism
(Structure and construction method of the recombinant molecules; Method used to introduce target genes into recipient cells).
- Characteristics of the genetically modified organisms
(Comparison with recipient organisms; Characteristics with respect to survival, growth and reproduction; Crossing possibility; Inserted genes; Localization, copy number and stability of the inserted gene in recipient cells; Stability of the introduced gene expression; Any previous genetic manipulations applied to already modified genetically modified organisms; Method to restrict the multiplication ability in open environment; Any other important remarks obtained in the transformation experiment or during the preliminary application in the controlled model environment).
- Other Considerations in Assessing Characteristic of Genetically Modified Microorganisms:
Known potential of natural variants to cause epidemics (survival rates, reproduction, dispersal, etc.); Known potential to cause losses; Known potential hosts and their economic or social importance; Known natural ability to evolve; Known carriers of organism and abundance
- Known epidemiological factors
(Host range; Pathogenicity, infectivity; Production of biological active compounds, if any; Mode of spread including vectors and other transport hosts; Environmental conditions needed for epidemics; History of epidemic, if any).
- Laboratory testing
(Required containment facilities of laboratory; Required biosafety equipments; Sterilization procedures; Personnel awareness of biosafety procedures; Labeling/designation of “risk” areas; Decontamination facilities).
- Field testing (Microorganisms on Soil/Water Associated with Plants).
(Specify the survival and reproduction characteristics of the organism in the rhizosphere of the

plant species in the test site and surrounding environment; Give the effects on organisms likely to be in the test area which are known to be beneficial to plants (e.g. Rhizobium, Frankia and mycorrhizal fungi).

- Field testing (Microorganisms to be used for biological control).

(State the effects that the unmodified and modified organisms have on the biological control target, the plant or animal being protected and non-target species (including humans) in the test area and surrounding environment. State, in particular, if there are any growth or quality reductions in the protected organism).

- Live Vaccines

(Specify/give the identification characteristics or markers, the growth requirements, and the genetic modification of the vaccine strain of the organism; Specify the proposed dose rate(s); Give the period when the vaccine organism can be detected in the vaccinated animals and their excretions; Indicate if the vaccine organisms spread from vaccinated to in-contact, non-vaccinated animals of the same or other animal species. If so, state the mechanisms and frequency; Give the vaccine strain's frequency of reversion to wild type characteristics; For pen trials, specify arrangements proposed for disposal of waste containing any vaccine organisms and of the vaccinated animals at the conclusion of the trial; Give the clinical effects of the vaccine organism target and non-target species in the test area and surrounding environment; Specify the level and duration of immunity produced in the target species; State challenge or other tests using virulent field strains to be carried out on vaccinated animals; Indicate the probability of the host vaccine organism being used in other human or animal vaccines; Specify if the use of this vaccine precludes the future use of the host vaccine organism for immunization purposes)

6.7 For Experiments Involving Genetically Modified Animals

- Domesticated or farmed animals (terrestrial, aquatic).

Indicate the desirable effects expected to result from the use of the modified animal (e.g. improved reproduction, weight gain, and disease resistance and production gains).

State the undesirable effects that may result from the release of the modified organism like alteration of nutritional quality (e.g. difficult birth, fertility reduction, and increased disease prevalence, tumorigenicity and production losses). Indicate if any of the likely gains are directly linked to losses in other characteristics of the species (e.g., an increased growth rate being accompanied by a decrease in wool or milk production).

- Indicate if the genetic trait can be transmitted other than through their normal reproduction (e.g., from animal to animal via virus or insect transmission).

APPROVAL “KEY” FOR BIODIVERSITY RESEARCH

In country research

Research with importation of specimens

Research with exportation of specimens

Key 1

Key 1 + Key 2

Key 1 + Key 3



Key 1: In Country Research

WILD SPECIES 1
(Any animal which is not a domestic animal)
 PROTECTED SPECIES 2
 Protected species in protected areas 3
 DWC protected areas 4
 Strict Nature Reserve..... 5
 Animal/animal products 6
 Plant/plant product 6
 Ecosystem/Habitat/nitch 6

Research with specimen collection 7

DWC approval
Approval for research under strict supervision
Entry with a written permit
Special permission for more than 3 specimens

Research without specimen collection ... 7

DWC approval
Approval for research
Entry with a written permit

National Park..... 5
 Animal/animal products 8
 Plant/plant products 8
 Ecosystem/Habitat/nitch 8

Research with specimen collection..... 9

DWC approval
Approval for research
Entry with a written permit
Special permission for more than 3 specimens

Research without specimen collection 9

DWC approval
Approval for research
Entry with a written permit

Nature Reserve..... 5
 Animal/animal products 10
 Plant/plant products 10

Ecosystem/Habitat/nitch 10

Research with specimen collection 11

DWC approval

Approval for research

Special permission for more than 3 specimens

Research without specimen collection ... 11

DWC approval

Approval for research

Sanctuary 5

Animal/animal products 12

Plant/plant products 12

Ecosystem/Habitat/nitch 12

Research with specimen collection 13

DWC approval

Approval for research

Special permission for more than 3 specimens

Research without specimen collection ... 13

DWC approval

Approval for research

FD protected areas 4

Forest Reserve..... 14

Animal/animal products 15

Research with specimen collection 16

DWC approval

Approval for research

Special permission for more than 3 specimens

FD approval

Research without specimen collection 16

DWC approval

Approval for research

FD approval

Entry approval

Plant/plant product	15
Ecosystem/Habitat/nitch	15

Research with/without specimen collection	16
---	----

FD approval

Approval for research

Proposed Forest Reserve	14
Animal/animal products	17

Research with specimen collection	18
---	----

DWC approval

Approval for research

Special permission for more than 3 specimens

FD approval

Entry approval

Research without specimen collection ...	18
--	----

DWC approval

Approval for research

FD approval

Entry approval

Plant/plant product	17
Ecosystem/Habitat/nitch	17

Research with/without specimen collection	19
---	----

FD approval

Approval for research

Other protected areas	4
Archeological/Fisheries/Irrigation.....	20
Animal/animal products	21
Plant/plant product	21
Ecosystem/Habitat/nitch	21

Research with/without specimen collection	22
---	----

DWC approval
Approval for research
Special permission for more than 3 specimens
Department of Archeology/Fisheries/Irrigation
Entry approval

Protected species outside protected areas including private lands	3
Animal/animal products	23
Research with/without specimen collection	24

DWC approval
Approval for research
Special permission for more than 3 specimens

Plant/plant product	23
Ecosystem/Habitat/nitch	23
Research with/without specimen collection	25

FD approval
Approval for research

OTHER SPECIES	2
Other species in protected areas	26
DWLC protected areas	27
Strict Nature Reserve.....	28
Animal/animal products	29
Plant/plant product	29
Ecosystem/Habitat/nitch	29
Research with specimen collection	30

DWC approval
Approval for research under strict supervision
Entry with a written permit
Special permission for more than 3 specimens

Research without specimen collection	30
--	----

DWC approval
Approval for research
Entry with a written permit

National Park.....	28
Animal/animal products	31
Plant/plant products	31
Ecosystem/Habitat/nitch	31

Research with specimen collection 32

DWC approval
Approval for research
Entry with a written permit
Special permission for more than 3 specimens

Research without specimen collection 32

DWC approval
Approval for research
Entry with a written permit

Nature Reserve	28
Animal/animal products	33
Plant/plant products	33
Ecosystem/Habitat/nitch	33

Research with specimen collection 34

DWC approval
Approval for research
Special permission for more than 3 specimens

Research without specimen collection ... 34

DWC approval
Approval for research

Sanctuary.....	28
Animal/animal products	35
Plant/plant products	35
Ecosystem/Habitat/nitch	35

Research with specimen collection 36

DWC approval
Approval for research
Special permission for more than 3 specimens

Research without specimen collection 36

DWC approval Approval for research
--

FD protected areas	27
Forest Reserve	37
Animal/animal products	37
Research with specimen collection	38

DWC approval Approval for research Special permission for more than 3 specimens FD approval Entry approval
--

Research without specimen collection....	38
--	----

DWC approval Approval for research FD approval Entry approval

Plant/plant product	37
Ecosystem/Habitat/nitch	37
Research with/without specimen collection	39

FD approval Approval for research

Proposed Forest Reserve	37
Animal/animal products	40
Research with specimen collection	41

DWC approval Approval for research Special permission for more than 3 specimens FD approval Entry approval
--

Research without specimen collection ...	41
--	----

DWC approval
Approval for research
FD approval
Entry approval

Plant/plant product	40
Ecosystem/Habitat/nitch	40

Research with/without specimen collection	42
---	----

FD approval
Approval for research

Other protected areas	27
Archeological/Fisheries/Irrigation.....	43
Animal/animal products	44
Plant/plant product	44
Ecosystem/Habitat/nitch	44

Research with/without specimen collection	45
---	----

DWC approval
Approval for research
Special permission for more than 3 specimens
Department of Archeology/Fisheries/Irrigation
Entry approval

Other species outside protected areas	26
Including private lands	
Animal/animal products	46

Research with/without specimen collection	47
---	----

DWC approval
Approval for research
Special permission for more than 3 specimens

Plant/plant product	46
Ecosystem/Habitat/nitch	46

Research with/without specimen collection	47
---	----

FD approval
Approval for research

DOMESTICATED SPECIES	1
(any head of cattle, or any sheep, goat, horse, ass, mule, dog, or cat, any domestic fowl reared by man as poultry, and when domesticated by man, any pig)	
FARM ANIMAL	48

AP&H approval
Approval for research

NON FARM ANIMAL	48
Pet	49
Fish, reptiles, amphibians.....	50

DWC approval
Approval for research

Domestic birds.....	50
---------------------	----

AP&H approval
Approval for research

Domestic mammals.....	50
-----------------------	----

AP&H approval
Approval for research

Elephant	51
----------------	----

DWC approval
Approval for research

Animal and parts for industrial use	49
Microorganisms	52

Dept. of Health (for human pathogens)/
DoA approval
Approval for research

PLANTS/ PLANT PRODUCTS	48
------------------------------	----

DoA approval
Approval for research

Food crops.....	53
-----------------	----

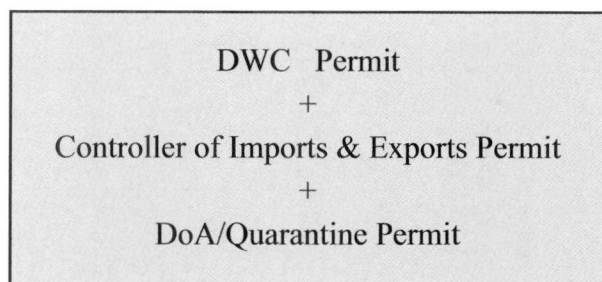
DoA/PGRC approval
Approval for research

Key 2: Importation of specimens

WILD 1

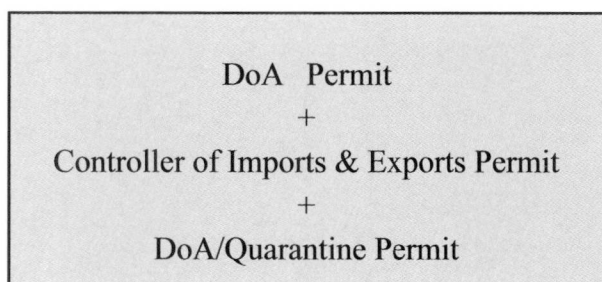
FAUNA 2

(Any animal which is not a domestic animal: vertebrate, invertebrate, metabolites and other extracts of organisms, genetically modified animals)



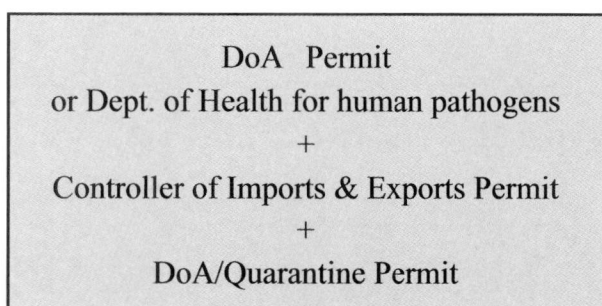
FLORA 2

(Plant means all members of the plant kingdom whether living or dead or any part or parts thereof including seeds, plant products means all unprocessed material of plant origin including grain and includes processed products of plant origin that by their nature or by reason of their processing may create a risk for their spread of pests: metabolites, extracts of plants, genetically modified plants)



MICROORGANISM 2

(Algae,Fungi,Bacteria,protozoa, phytoplasmas, mycoplasmas, mycoplasma-like entities, viruses, viroids, plasmids, phages, etc.)

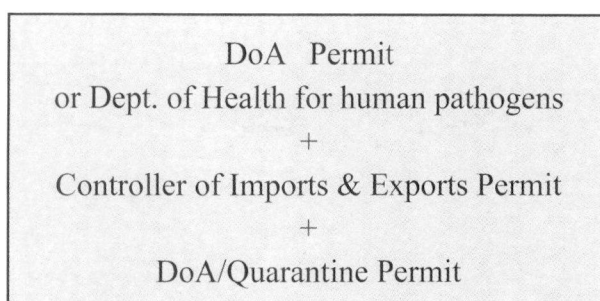


DOMESTICATED 1

FARM ANIMAL 3

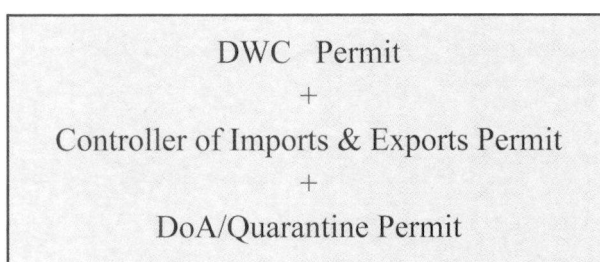
(Buffalo, sheep, goat, pig)

	AP&H Permit + Controller of Imports & Exports Permit + DoA/Quarantine Permit	
NON FARM ANIMAL		3
Pet		4
Fish, reptiles, amphibians.....		5
	DWC Permit + Controller of Imports & Exports Permit + DoA/Quarantine Permit	
Domestic birds.....		5
	AP&H Permit + Controller of Imports & Exports Permit + DoA/Quarantine Permit	
Domestic mammals.....		5
	AP&H Permit + Controller of Imports & Exports Permit + DoA/Quarantine Permit	
Elephant		6
	DWC Permit + Controller of Imports & Exports Permit + DoA/Quarantine Permit	
Animal and parts for industrial use		4
Microorganisms		7

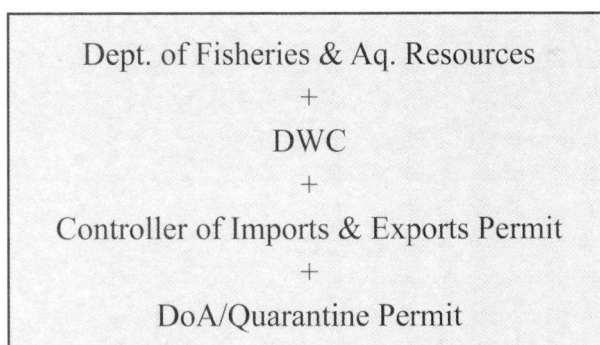


Key 3: Exportation of specimens

WILD	1
FAUNA	2
(Any animal which is not a domestic animal: vertebrate, invertebrate, metabolites and other extracts of organisms, genetically modified animals)	

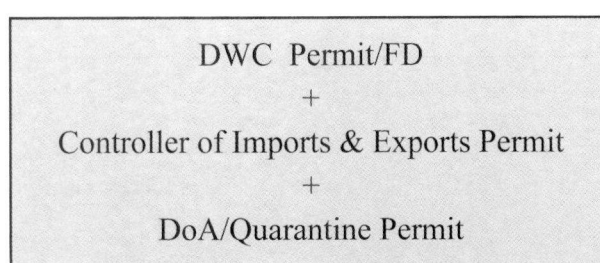


Gazetted fish species/marine.....	3
-----------------------------------	---

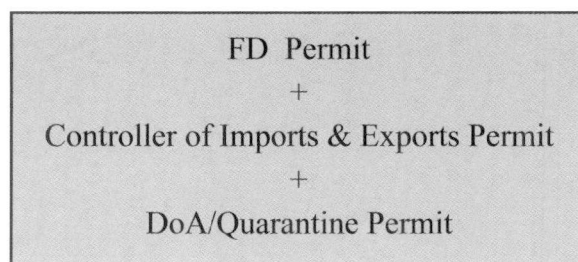


FLORA	2
(Plant means all members of the plant kingdom whether living or dead or any part or parts thereof including seeds, plant products means all unprocessed material of plant origin including grain and includes processed products of plant origin that by their nature or by reason of their processing may create a risk for their spread of pests: metabolites, extracts of plants, genetically modified plants)	

Protected flora	4
------------------------------	----------

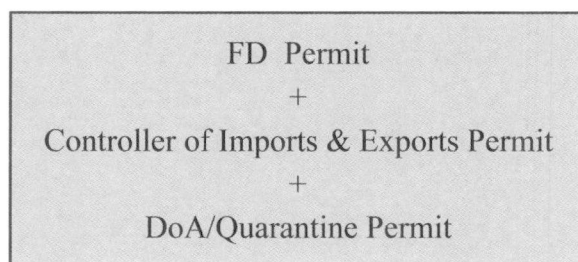


Non protected flora 4

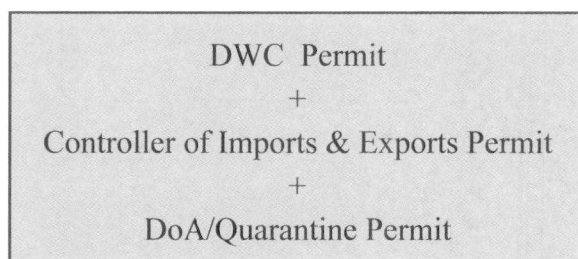


MICROORGANISM 2
 (Algae,Fungi,Bacteria,protozoa, phytoplasmas, mycoplasmas, mycoplasma-like entities, viruses, viroids, plasmids, phages, etc.)

Microflora 5

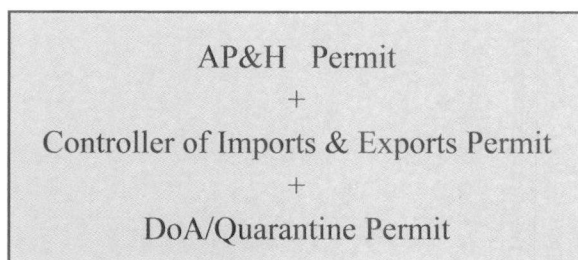


Microfauna (soil)..... 5



DOMESTICATED 1

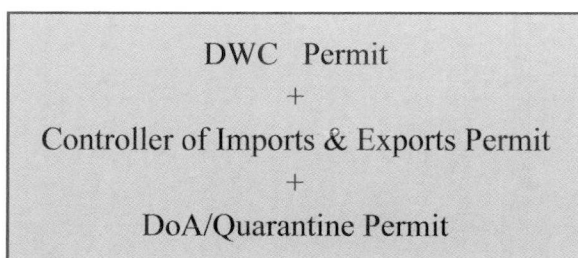
FARM ANIMAL 6
 (Buffalo, sheep, goat, pig)



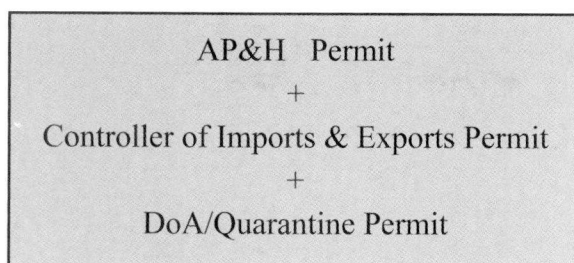
NON FARM ANIMAL 6

Pet 7

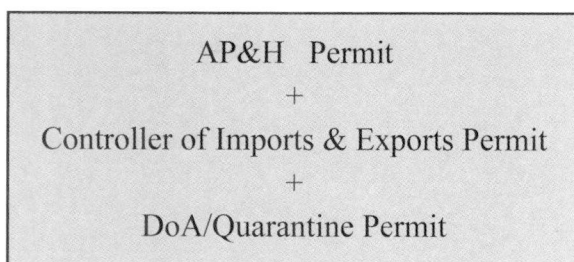
Fish, reptiles, amphibians..... 8



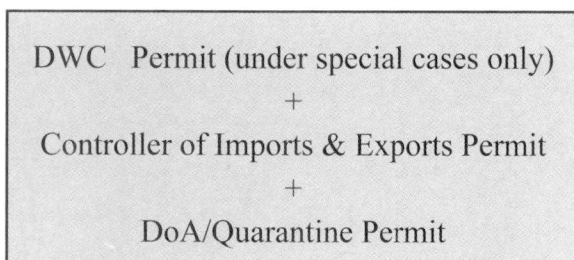
Domestic birds	8
----------------------	---



Domestic mammals	8
------------------------	---

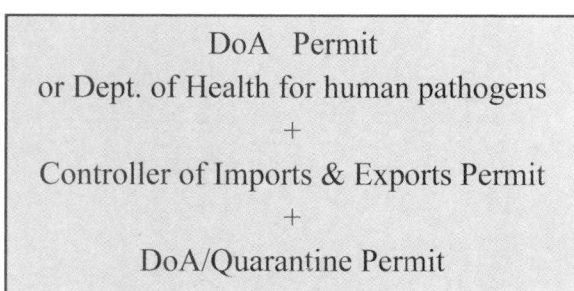


Elephant	9
----------------	---



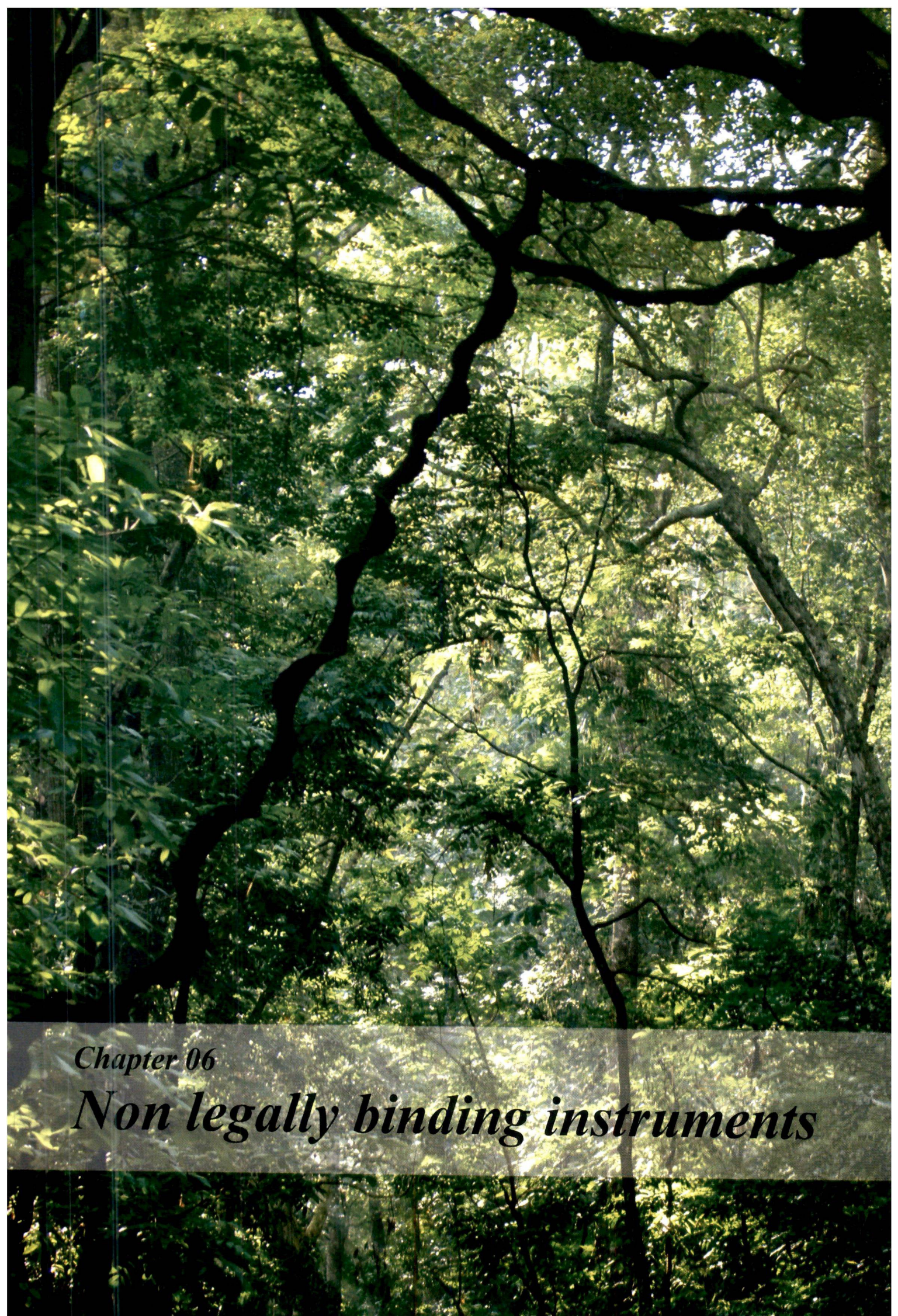
Animal and parts for industrial use	7
---	---

Microorganisms	10
----------------------	----



5.6 Material Transfer Agreement

Biodiversity Secretariat of the Ministry of Environment prepared a Code of Ethics for research on biological diversity involving access to genetic resources which is a non legally bindings document. But according to the code, an agreement has to be signed by the government and the parties involved in the transfer of the genetic material out of the country if the research gives rise to discoveries leading to development of commercial products or processes.



Chapter 06

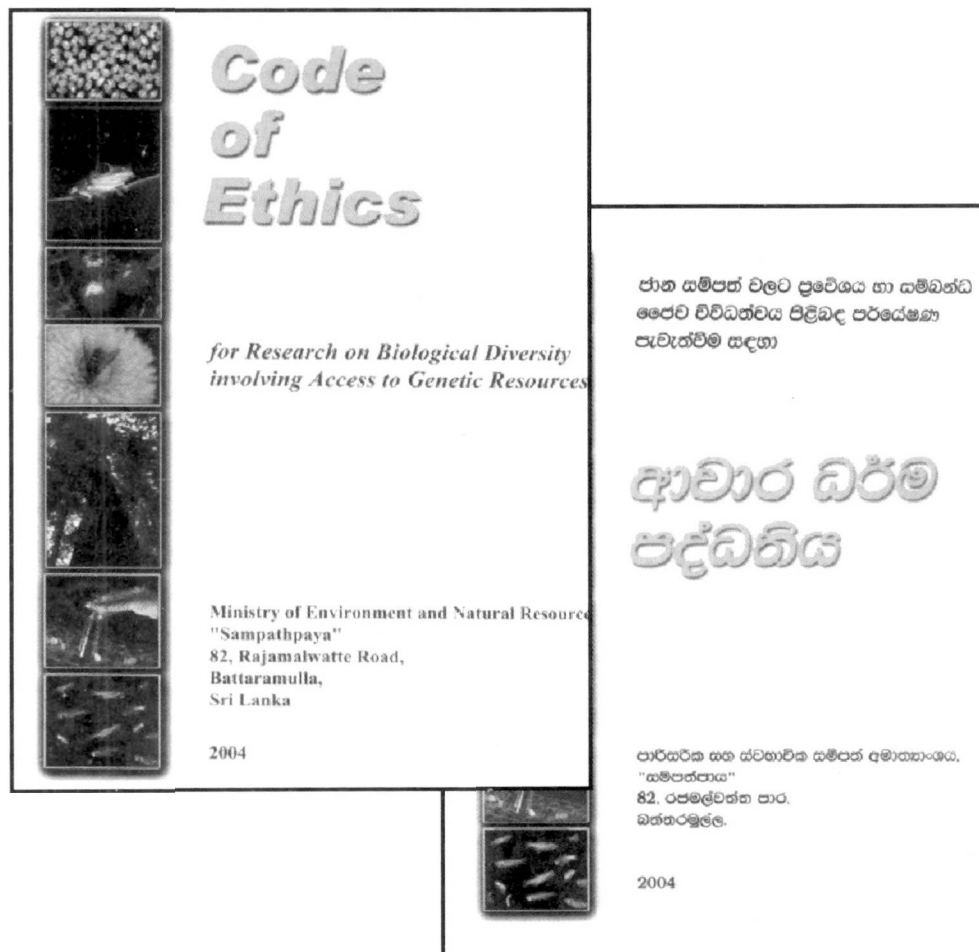
Non legally binding instruments

Non legally binding instruments

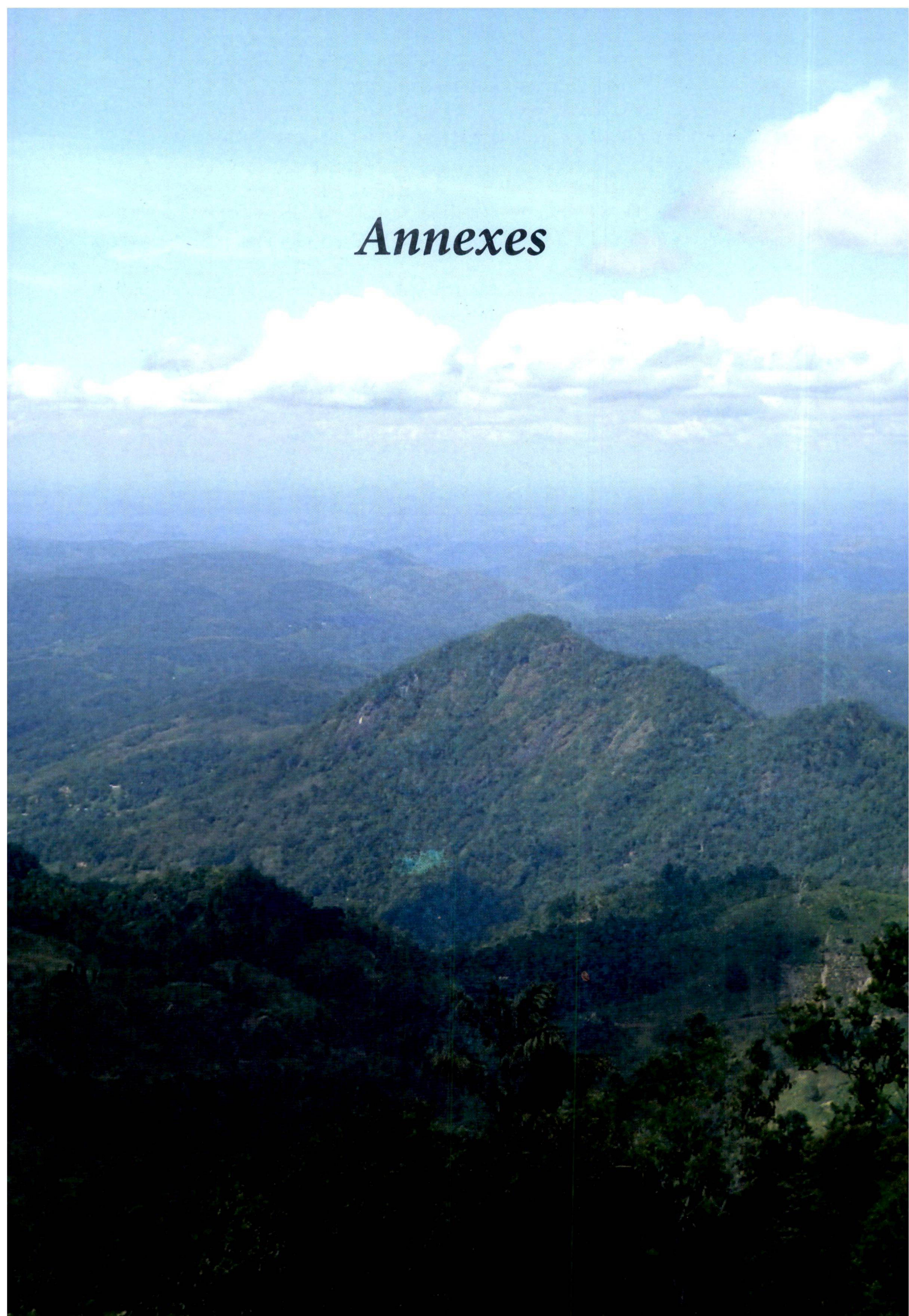
6.1 Code of Ethics for Research on Biological Diversity involving Access to Genetic Resources(2004)

Biodiversity Secretariat of the Ministry of Environment & Natural Resources prepared a Code of Ethics for research on biological diversity involving access to genetic resources which was reprinted in 2013.

Any person or institutions engage in or proposing to engage in research on the biological diversity in Sri Lanka that will involve transfer of genetic material /metabolites/other extracts of organisms out of the country should conform to the code.



Annexes



APPLICATION FOR RESEARCH PERMIT

Department of Wildlife Conservation

1 Project Title			
2 Research Field (Please tick the relevant category)			
Fauna ☐	Flora ☐	Fauna & flora ☐	Other ☐
3 Investigators (name, designation, institution nationality & address)			
Principal investigator		Co-investigator	
Email		Email	
Telephone Fax		Telephone Fax	
4 Assistants (name, designation, institution nationality & address)			
i	ii	iii	
5 Objectives of the project			
6 Study area			
7 Does the study area fall within any wildlife protected area ?			
Yes / No –if yes please specify			
8 Methodology (Please furnish details in a separate sheet)			
9 Does the research require any of the following?			
Please tick the relevant category and furnish details such as species, numbers, tranquilizing & capture methods, equipment used, time period etc. in a separate Sheet.			
Collection of specimens (live/dead)	☐	if yes, no. of specimens required	☐
Collection of samples (blood/hair/parts)	☐	if yes, no. of samples required	☐
Construction of structures within PAs	☐	Night sampling	☐
Tranquilizing	☐		

10 Does any of the collected specimen/sample to be exported ?	
Yes / No if yes, please furnish details in a separate sheet	
11 Project duration, total cost & source of funding?	
12 Is this a continuation of an ongoing project ?	
Yes/No	
13 Have your research applications ever been rejected by the Research Committee?	
Yes / No if yes, please furnish details in a separate sheet	
4 Name and address of collaborating institutions (please attach letter/s of concurrence)	
i	ii

I hereby certify that all the details furnished by me are true and correct and agree to the guidelines and conditions laid down by DWC for research on wildlife resources.

Applicant’s signature

Date

I recommend the research proposal of Ms/Mr/Dr/Prof.....

Signature

Head/Dean/VC/President

Date





FOREST DEPARTMENT
Research & Education Division
“Sampathpaya”, Rajamalwatte Road,
Battaramulla.

Tel.: (011)2866628

Fax: (011)2866628

E-mail: researchdivi@gmail.com

Application for Forestry Research

1.0 Details of Research Project					
1.1 Project title :					
1.2 Duration:	Months		Years:		
				From	To
1.3 Objectives:					
1.4 Location:					
District:		Forest:		Area/Site:	
1.5 Short summary of the research project (Please attach) : Summary should include, Scientific scope of the project (description of research program including objectives), Scientific background, proposed methods, time schedule and reference to relevant literature					
1.6 State whether a new project or continuation of an on going project :					
1.7 Total cost of the project:					
1.8 Funding source and relevant details:					

1.9 Do you intend to collect any of samples	Yes		No	
If 'Yes'				
a) Type of Floral or Faunal* samples - (include scientific names, no. of samples required, method of collection with other relevant details)				
b) Other samples – e.g. soil* etc. (include type of material, no. of samples required, weight of each sample and method of collection etc.)				
1.10 Do you intend to sent abroad any of the samples?	Yes		No	
1.11 Reasons of export:				
1.12 Nature of the sample to be sent abroad * (quantity, specimens, dry matter, extracts etc.)				
1.13 Receiving agency: (Kindly provide name and designation of the responsible person, name of the institute with address and other contact details with a letter of concurrence)				
1.14 Have you obtained necessary permission from other relevant institutions if required for implementation of your research (kindly attach a copy of the permission letter)				

* Kindly attach a copy of the permission letter obtained from the Department of Wildlife Conservation/ Director Bio Diversity/ Ministry of Environment

2.0 Details of the Applicant

2.1 Applicant (Principal Investigator)

2.1.1 Personal information

Name with initials: Prof./Dr./Ms./Mr.....
 Nationality: National Identity Card No:
 Permanent address:
 Telephone No:
 Mobile phone No.: Fax No.:

2.1.2 Professional information

Designation:
 Official address:
 Telephone No:..... E-mail:.....

2.2 Co-Investigator

2.2.1 Personal information

Name with initials: Prof./Dr./Ms./Mr.....
 Nationality: National Identity Card No:
 Permanent address:
 Telephone No:
 Mobile phone No.: Fax No.:

2.2.2 Professional information

Designation:
 Official address:
 Telephone No:..... E-mail:.....

2.2.3 Field Assistants

Name	Address	Nationality	NIC No.
(a)			
(b)			
(c)			
(d)			

2.2.4 Names & addresses of collaborating institutions with the names of the Head and the person involved in the research project. (Please attach letter/s of concurrence)

(a)

(b)

3.0 Certification of the Head/ Dean/ Vice Chancellor/ President

3.1 Certification of the Principal Investigator :

I.....(full name) hereby certify that all the detail furnished by me are true & correct and agree with the guideline & conditions laid down by the Forest Department for research activities and bound not to violate rules and regulations of the forest ordinance. Further I agree to be responsible of refrain from using endemic plant materials permitted here to export for any commercial purposes.

Name of the investigator : Prof./Dr./Ms./Mr.....

Designation :

Name of the Institute/Department :

.....
Signature of the applicant

Date :

3.2 Certification of the Head of the Institute :

The application of Prof. /Dr./ Ms./ Mr. is approved and the facilities of the institution will be provided to the applicant.

Name / Head of the institution : Prof./Dr./Ms./Mr.

Contact No :

Date :

.....
Signature of head of the Institute

Rubber Stamp

Instructions to the Applicant:

- Principal Investigator should always be a Sri Lankan national attached to a reputed local organization.
- In case of graduate research projects, research supervisor should always be the principal investigator.
- If a time extension is expected for an on-going project, a letter of request together with a progress report and a justification should be submitted three months prior to the termination of the permit.
- It is essential to enter into a material transfer agreement with the Forest Department in order to export a specimen for further investigations.
- All permit holders are required to submit the final report within six months of the completion of the project. This will be an essential requirement to consider grant research permits for the applicant in the future.

Kindly submit 3 copies of this form with a detailed proposal.

