Proposed Action Plan: Conservation, Restoration and Management of the Testudines and their habitats in Sri Lanka

Anslem de Silva
Proposed Action Plan:
Conservation, Restoration and Management of the
Testudines and their habitats in
Sri Lanka

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Three confusing names: Turtles, tortoises and terrapins

All tortoises are turtles
but not all turtles are tortoises
All terrapins are turtles
but not all turtles are terrapins
Some turtles are just turtles

Source: Das & Whitaker, 1993
List of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>04</td>
</tr>
<tr>
<td>Preface</td>
<td>05</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>05</td>
</tr>
<tr>
<td>Introduction</td>
<td>06</td>
</tr>
<tr>
<td>Objectives</td>
<td>06</td>
</tr>
<tr>
<td>Checklist of Testudines of Sri Lanka</td>
<td>07</td>
</tr>
<tr>
<td>Threat categories</td>
<td>08</td>
</tr>
<tr>
<td>Conservation priorities</td>
<td>08</td>
</tr>
<tr>
<td>Threats and stressors</td>
<td>09</td>
</tr>
<tr>
<td>Turtle research projects</td>
<td>11</td>
</tr>
<tr>
<td>Marine turtle hatcheries</td>
<td>12</td>
</tr>
<tr>
<td>Pet trade</td>
<td>12</td>
</tr>
<tr>
<td>Recommended actions for conservation and management</td>
<td>13</td>
</tr>
<tr>
<td>Expert resources available</td>
<td>15</td>
</tr>
<tr>
<td>References</td>
<td>16</td>
</tr>
<tr>
<td>Further recommended reading</td>
<td>18</td>
</tr>
</tbody>
</table>

Appendices

I Turtle carapace and plastron                   20
II Key to the turtles of Sri Lanka                21
III Some marine turtle nesting localities        22
IV Distribution of land turtles                  23
V Distribution of Geochelone elegans             24
VI Coastal habitats of Sri Lanka                 25
VII Some Marine turtle hatcheries of Sri Lanka   26
VIII Specialist chelonian organizations          27

(The views expressed in this book are those of the author and are not necessarily endorsed by the Dept of Wildlife Conservation)
Foreword

Despite its small size, the island nation of Sri Lanka harbours rich biodiversity of global significance. The Department of Wildlife Conservation (DWLC) is the key player in the field of nature conservation commanding some 13% of the country's land area in 70 protected areas in varied habitats ranging from montane to coastal ecosystems.

Department of Wildlife Conservation has been seized of the significance of testudines as an important segment of reptilian fauna and of the diverse habitats they inhabit. Not only are their habitats safe guarded in the protected area network but many species have been afforded protection outside the PAs too.

In 1970, Dermochelys coriacea (Leatherback Turtle) was the first species of turtles to be protected, subsequently, in 1972 the other 4 marine turtles (Caretta caretta, Chelonia mydas, Eretмochelys imbricata and Lepidochelys olivacea) too were given legal protection. The law prohibits killing, harming, capturing and collecting turtle eggs.

As shown in this Action plan, there are many threats faced by the turtles, terrapins and tortoise of Sri Lanka. Legal protection and field conservation measures need the all important support of people by making them aware of the scientific and cultural aspects of conservation. This booklet will hopefully provide wildlife managers, planners and conservationists some suggestions in conservation, restoration, management and conducting public awareness programmes on the testudines of Sri Lanka.

Lalith Hettiarachchi
Director, Dept of Wildlife Conservation and National Project Director
Global Environmental Facility Project, Colombo
May 1996.
Preface

A preliminary Action Plan for the conservation and management of amphibians and reptiles of Sri Lanka was presented at the First IUCN/SSC, Indian Subcontinent Reptile and Amphibian Specialists Group (now renamed the South Asian Reptile and Amphibian Specialist Group) meeting held in Orissa, India, in February 1992. This included a brief account of the order Testudines of Sri Lanka. A preliminary draft of the present Action Plan for the conservation and management of testudines of Sri Lanka, was submitted by the author during the first “Action Plan for Turtle Conservation” meeting held in Colombo on 16 June 1994. It was chaired by the Director, Dept of Wildlife Conservation, Sri Lanka, and after that many revisions were made.

It is hoped that this Action Plan will be a “live” one and that its recommendations and suggestions will be implemented, instead of becoming yet another document which will gather dust on a library shelf.

Ansiem de Silva
University of Peradeniya, May 1996.

Acknowledgements

I wish to thank the Director, Department of Wildlife Conservation & Global Environmental Facility Programme, for funding this publication to be issued for the participants of the International Conference on the Biology and Conservation of South Asian Amphibians and Reptiles, held in Peradeniya and Kandy in August 1996; to Malik Fernando, Indranil Das, Peter Richardson and D G A Perera for their helpful comments and suggestions; and Bernard Devaux for inviting the author to present the preliminary report of this paper at the International Congress of Chelonian Conservation, Gunfearon, France in 1995. Turtle Conservation Project (Heather Kalb) for providing a colour photo of Eretmochelys imbricata (Hawksbill turtle).
1. Introduction
The order Testudines is an important component of the herpetofauna of Sri Lanka, as its three main groups, namely the marine, freshwater and land turtles are found in the Island. Freshwater and land turtles are also called pond turtles or terrapins and tortoises respectively. They add to the biodiversity of the herpetofauna of Sri Lanka. Their vital ecological functions help to maintain the health and balance of nature, and preserve their prominent place in the heritage of the world. Our knowledge of the ecology, distribution and status of testudines is poor; but the alarming, uncontrolled rate of collection of eggs for sale and consumption, the killing of turtles (for meat, aphrodisiacs, medicines and souvenirs), the rapid depletion of natural habitats and nesting grounds, their collection of these animals for the pet trade are some of the well known threats and strains faced by the wild turtle populations of Sri Lanka. The slow growth rate of these animals reduces their ability to cope with such decimation of their numbers.

2. Objectives of the action plan
2.1. To take immediate steps to carry out a status survey and simultaneously protect and restore existing populations of testudines and their habitats and feeding grounds (sea-grass beds, coral reefs, open tracts in forests with grass and weeds) in Sri Lanka by implementing existing laws.

2.2. To take immediate steps to monitor, evaluate and improve existing programs, such as on-going turtle research projects, Marine turtle hatcheries etc.
2.3. To conduct awareness programs, with a view of enhancing conservation and research in areas where turtles are threatened.

2.4. To conduct status surveys and appropriate research projects on the turtles of Sri Lanka in important habitats.

2.5. To identify threats faced by turtles and conduct surveys to evaluate their extent and significance with the aim of eliminating them or minimizing their effects.

2.6. To monitor the importation of foreign turtles into Sri Lanka by pet traders (e.g., Red-eared terrapins). There is evidence that this species (Pseudemys scripta, renamed Chrysemys scripta by Pritchard, in 1979) some have escaped, and are now found in the wild around Colombo.

2.7. To identify possible alternative sources of income generation for local people currently exploiting Sri Lankan testudines and lobby the appropriate government authorities to implement projects for alternative employment.

2.8. To devise and implement sustainable and participatory turtle conservation strategies in all important habitats.

2.9. To declare some major nesting beaches as sanctuaries.

3. Checklist of Testudines of Sri Lanka

Order: Testudines

**Family Bataguridae** (Asian pond turtles)
- *Melanochelys trijuga parkeri* Deraniyagala, 1931 (English = Parker's Rock Turtle; Sinhalese = *Parkerge Gal Ibbu*).
- *Melanochelys trijuga trijuga* Schweigger, 1814 (English = Rock Turtle; Sinhalese = *Gal Ibbu*).

**Family Cheloniidae** (Sea turtles)
- *Caretta caretta* (Linnaeus, 1758) (English = Loggerhead Sea Turtle; Sinhalese = *Olugedi Kesbava*).
- *Chelonia mydas* (Linnaeus, 1758) (English = Green Sea Turtle; Sinhalese = *Gal Kesbava*).
- *Eretmochelys imbricata* (Linnaeus, 1766) (English = Hawksbill Sea Turtle; Sinhalese = *Pothu Kesbava*).
- *Lepidochelys olivacea* (Eschscholtz, 1829) (Olive Ridley Sea Turtle; Sinhalese = *Batu Kesbava*).

**Family Dermochelyidae** (Leatherback sea turtles)
Dermochelys coriacea (Linnaeus, 1766) (English = Leathery Turtle; Sinhalese = Dhara Kesheva)

**Family Testudinidae** (Land tortoises)

*Geochelone elegans* (Schoepff, 1795) (English = Star Tortoise; Sinhalese = Mevovara Ibbu; Tharaka Ibbu)

**Family Trionychidae** (Soft-shelled turtles)

*Lissemys punctata punctata* (Lacepede, 1788) (English = Flapshell Turtle; Sinhalese = Kiri Ibbu)

Doubtful taxon: The Flatback Turtle (*Natator depressa*) is considered a occasional visitor to our coastal waters. (Deraniyagala 1971, Hewavirisenth 1990; Wickramasinghe, 1981). A key to identify the testudines are given in Appendix II.

4. **Threat categories**

4.1. The Red Data Book (World Conservation Monitoring Center, 1990), lists *Chelonia mydas, Eretmochelys imbricata, Lepidochelys olivacea, Dermochelys coriacea* as endangered and *Caretta caretta* as vulnerable taxa.

4.2. CITES: All marine turtles and *Lissemys punctata* are listed in Appendix I and *Geochelone elegans* in Appendix II.

4.3. In Sri Lanka all marine turtles and *Geochelone elegans* are protected under the amendment of Fauna and Flora Protection Act of June 1972. Under this ordinance, it is an offence for any person to possess, capture, kill or injure these animals or to collect or destroy their eggs. However the 7th amendment to the Act (No.49 of 1993) gave protection to all reptiles.

5. **Conservation Priorities**

It is inappropriate to attempt proposing rigid conservation priorities as we lack reliable data about our turtles. The following provisional priority ranking for conservation activities is proposed, based on our preliminary observations:

**First Priority**: All taxa of marine turtles and *Melanochelys trijuga parkeri* (Deraniyagala, 1931). The latter is said to have restricted distribution.

**Second Priority**: *Melanochelys trijuga trijuga* and *Lissemys punctata punctata* (Lacepede, 1788)

**Third Priority**: *Geochelone elegans* (Schoepff, 1795).
6. Threats and Stresses

The threats faced by the turtles of Sri Lanka can be divided into two groups - natural threats and threats caused by human actions.

6.1. Natural threats
Natural threats occur throughout the life cycle of the turtle. For convenience, three phases of the life cycle have been distinguished: the eggs, the hatchlings and the adults.

6.1.1. Eggs
6.1.1.1. Turtle eggs are widely eaten by humans, Varanus salvator, Varanus bengalensis, Crocodylus porosus, C. palustris, Otters (Lutra species), wild pigs and dogs.

6.1.1.2. Marine turtle nests make on beaches that experience high rates of erosion and nests made late in the season are prone to being washed away or waterlogged by rough wave action. Excessive heat which may desiccate eggs may also have adverse effects on sexual behavior and gender determination.

6.1.1.3. Marine turtle eggs are prone to fungal and bacterial infections which will kill whole clutches once established in the nest. Clutches laid in areas of dense vegetation can also be killed by root penetration.

6.1.2. Hatchlings
6.1.2.1. Predation by fish, crabs, varanids, crocodiles, birds, wild boar, dogs and jackal.

6.1.2.2. Diseases - turtles are highly prone to parasitic infestations (internal and external). Shell necrosis and upper respiratory tract infections have been frequently observed.

6.1.3. Adults
6.1.3.1. Diseases - adult turtles are highly prone to parasitic infestations (internal and external), shell necrosis and respiratory tract infections.

6.1.3.2. Predation by sharks and large carnivorous cetaceans, crocodiles, wild boar etc.

6.1.3.3. Loss of nesting beaches due to erosion is a major problem faced by marine turtles visiting Sri Lanka.
6.1.3.4. Severe aquatic leech infestation in *Lissoma punctata* in the dry zone was observed. Tugores (1987) records death of hatchling turtles due to marine leech attack.

6.2. Threats caused by human interference

6.2.1. An important threat faced by all taxa of testudines (except *Geochelone elegans*, although there is recent evidence that humans feed on the flesh of this tortoise too) is killing them for meat and medicinal and aphrodisiac use, especially the flesh and eggs.

6.2.2. The major threat faced by all marine turtle taxa is the collection of their eggs for household consumption and for sale, to markets and turtle hatcheries. Surveys suggest that almost 100% of the nests on the south-west coast of Sri Lanka, from Colombo to Hambantota are robbed of their eggs (Richardson, 1996b).

6.2.3. Pet trade. There is evidence that terrapins and tortoises (*Geochelone elegans, Melanochelys trijuga* and *Lissoma punctata*) are widely captured to be reared as pets and for export (both legally and illegally).

6.2.4. Artificial lighting in or near nesting beaches may disorient marine turtle hatchlings preventing their escape into the ocean and also disturb nesting females.

6.2.5. Loss of marine turtle feeding grounds (sea-grass beds and coral reefs) as a result of pollution, coral mining and development in tourist industry.

6.2.6. Loss of habitat and nesting grounds of marine turtles and land tortoise due to vast agricultural projects and rapid urbanization is occurring at an alarming rate.

6.2.7. Local harvesting and import of *Eretmochelys imbricata* scales and *Geochelone elegans* carapaces for the illegal "tortoise shell" industry.

6.2.8. A study in one locality showed that approximately 55% of the *Geochelone elegans* population had their carapace damaged by humans giving rise to minor or grievous injuries (de Silva, 1996). Such injuries may be caused intentionally or unintentionally.

6.2.9. Depletion of prey species population of all sea turtle taxa, such as fish, crustacea, mollusks, echinoderms, jelly fish (*Schypho-medusa*) and cephalopods as a result of pollution, coral reef destruction and over fishing. When adult, *Chelonia mydas* is herbivorous but is carnivorous at the juvenile stage of the life cycle.

*Testudines Action Plan*
6.2.10. Increase of toxic substances in natural food due to extensive use of agrochemicals, fertilizers and other environmental pollutants.

6.2.11. Coastal, offshore, deep sea and inland fishing have increased during the past few decades. Although there is inadequate data, preliminary inquiries and data from other sources (Jinadasa, 1984; Hewavidana, 1990) have revealed that marine and freshwater turtles are trapped both accidentally and intentionally in fishing nets and illegally harvested. Also sea and freshwater turtles are captured incidental to other fishing activities.

6.2.12. During chena cultivation some star tortoises (*Geochelone elegans*) get burnt. A study in the dry zone revealed that of 105 *Geochelone elegans* studied four were burnt (de Silva, 1996).

7. Turtle research projects
The following are the main ongoing turtle research projects in Sri Lanka:

7.1. Ongoing status survey of turtles conducted by Amphibia and Reptile Research Organization of Sri Lanka, in collaboration with the Faculty of Veterinary Science, University of Peradeniya.

7.2. Turtle Conservation Project, conducted by 'Care for the Wild'.


7.4. Marine turtle research projects conducted by the Dept. of Zoology, Open University, Nawala, Rajagiriya.

7.5. Ongoing development of sustainable and participatory "in situ" nest protection and scientific monitoring strategies at Rekawa, and other important sea turtle rookeries.

7.6. Ongoing monitoring project of the extent of the "tortoise shell" industry in Sri Lanka by the Turtle Conservation Project.

7.7. Ongoing evaluation projects of the marine turtle hatcheries of Sri Lanka conducted by the NARA (National Aquatic Resources Agency) and Turtle Conservation Project.
7.8. Ongoing turtle conservation educational programmes at hotels, coastal community centers and schools conducted by NGO's.

8. Marine Turtle hatcheries
There are nearly twenty five marine turtle hatcheries in Sri Lanka (Appendix VII). These need immediate assessment, hence the following should be carried out.

8.1. Prepare guidelines and instructions/information packages for turtle hatcheries.

8.2. Prepare a list of all turtle hatcheries

8.3. Evaluate the hatcheries using advice from local and foreign experts.

8.4. Establish a government license scheme for the current hatcheries whereby government guidelines must be followed. Hatcheries that refuse or are unable to follow the guidelines should be closed down. Hatcheries that agree to follow the guidelines should be actively promoted by the Department of Wildlife Conservation and the Ceylon Tourist Board.

8.5. Establish posts for officers within the Department of Wildlife Conservation and NARA whose duties would be to coordinate all government and NGO involved in sea turtle, tortoise and terrapin related activities.

8.6. Design a pre structured questionnaire and issue to all marine turtle hatcheries so that they could maintain detailed accounts of eggs, hatchlings, species etc.

8.7. Research workers should have easy access to carry out their research at these hatcheries.

9. Pet Trade
9.1. There are many who keep Geochelone elegans and other turtles, local as well as imported, as pets. Prepare a list of persons who keep land tortoises as pets.

9.2. The traders who sell local as well as imported turtles should be monitored and listed. Importation of foreign species should be banned with immediate effect. (Refer 2.6)
10. Some Recommended actions for conservation, restoration and management

10.1. Conduct studies on all species of turtles to identify and investigate:


10.1.2. Conduct a comprehensive survey of all marine turtle rookeries of the entire coast line of Sri Lanka.


10.1.4. Threats unique to Sri Lanka

10.1.5. Evaluation and value of all ongoing research, conservation projects and marine turtle hatcheries are urgently required.

10.2. Increase and implementation of protective legislation, participatory action and conservation awareness programs at all known important nesting and feeding habitats of all taxa. Increase Police and Dept of Wildlife Conservation Officers patrolling/monitoring.

10.3. Educational and training programs on turtles and environmental law for the respective officers, concerned volunteers etc.

10.4. Protection, restoration and propagation of sea grass beds, reefs and known sandy nesting beaches.

10.5. Initiate collaborative research and conservation work on turtles with recognized local and foreign institutions and NGO's.

10.6. Initiate in situ conservation programs for all taxa and ex situ conservation programs where necessary and if scientifically proven to be of value.

10.7. Discourage or ban the building of hotels, shops and houses in or near favored turtle nesting sites. Also discourage camp fires, singing, dancing, playing music or shining torches in these nesting sites.

10.8. Monitor and evaluate ongoing captive breeding programs in commercial farms. There is a possibility of introducing parasites and or bacteria to wild populations in the course of release.

Turtles Action Plan
Study deformities caused by nutritional deficiencies. Release of captive turtles should be coordinated with accepted scientific and conservation authorities. Turtles for release should be permanently marked for identification and comprehensive records maintained. Releasing of animals should be well timed to coincide with the behavioral needs of the animals.

10.9. Publicize cases of poisoning and deaths due to consumption of marine turtle flesh (Aryyananda & Fernando, 1987) and the possible ill effects of eating an excess of high cholesterol loaded marine turtle eggs. Also publicize the habits of their feeding on excreta.

10.10. Ascertain the importance of turtles to ecology and commerce (i.e., potential eco-tourism value).

10.11. Carry out a census of families dependent on the “tortoise shell” industry and establish training programs for alternative employment, if found to be necessary.

10.12. Identify and monitor the markets for marine turtle flesh and their eggs and establish conservation awareness programs where such markets exist.

10.13. Modern fishing methods have made turtles more vulnerable (Jinadasa, 1984) hence conduct awareness programs for the fishermen and on the steps that should be taken to minimize turtles getting trapped and drowned in nets.

10.14. Determine the frequency of sea and fresh water turtle captures: species, sex and numbers per year, selling prices, income etc.

10.15. Organize international, national and regional symposia and workshops etc on turtles and conduct educational programs at schools and community centers where exploitation is widespread and threat to the local turtleines populations is very high.

10.16. Organize beach clean-up programs with the assistance of school children, local volunteers and NGO’s. Many turtles have died by ingestion of plastic bags.

10.17. Initiate specific conservation projects.

10.18. Declare major nesting beaches (e.g. Induruwa, Kosgoda, Rekawa, Bundala) as protected areas.

10.19. Inform cultivators (chena) in the dry Zone, Sri Lanka, before setting fire to
the dry vegetation to check it for possible star tortoises hiding under fallen leaves.

10.20. To erect a fence around the vegetable (beans etc.) and ground nut cultivations as Geochelone elegans feed on tender leaves of these voraciously.

11. Expert resources available

11.1. Government departments: Department of Wildlife Conservation, Gregorie’s Road, Colombo 07; National Aquatic Research Agency, (NARA), Colombo, 13; Coast Conservation Department, Colombo 10; National Museums Department, Colombo 07; Zoological Gardens, Dehiwala.

11.2. In addition there are many local herpetological societies which provide technical advice and information on turtles. They are:

a. Wildlife and Nature Protection Society of Sri Lanka (WNPS) Chitaya Road, Colombo 01
b. Amphibia and Reptile Research Organization of Sri Lanka (ARROS), 15/1 Dolosbige Road, Gampola
c. Turtle Conservation Project (TCP), 14’A, de Saram Road, Mount Lavinia
d. Young Zoologists Association, Zoological Gardens, Dehiwala.

11.3. Personnel

11.3.1. Research workers on testudines from Sri Lanka:
Suhashini Hewavitharaka and Sarath Kotagama, Open University, Rajagiriya, Sri Lanka; Vijitha Kuruvita, R PJ Rajapaksa, Anselm de Silva, University of Peradeniya, Sri Lanka; Peter Richardson and Susan Ranger, TCP, Ml Lavinia.

11.3.2. Experts from abroad:
Peter C H Pritchard, Florida Audubon Society, Caselberry, Florida 32707, USA; Edward O Mole, Eastern Illinois University, Charleston, Illinois, USA; Ian R. Swingland, University of Kent, UK; Indraneil Das, Center for Herpetology, Madras Crocodile Bank, India; Gerald Kuchling, Dept of Zoology, University of Western Australia, WA 6009, Australia.

11.4. There are many specialist chelonian organizations abroad, who usually provide information and expert advice. These are listed in Appendix VIII.
References


De Silva, Anslem (1992) Reptiles and amphibians of Sri Lanka: an action plan for their conservation and management. IUCN/SSC/ISRAG. Orissa, India.


*Testudines Action Plan*


Pritchard, P C H (1979) Encyclopedia of turtles T F H Publications. New Jersey and Hong Kong


World Conservation Monitoring Center (1990) 1990 IUCN Red List of threatened animals.
Further recommended reading


Turtles Action Plan


Witzell, W N (1983) Synopsis of biological data on the hawksbill turtle, Eretmochelys imbricata (Linnaeus, 1766) FAO Fish synop (137): 1-78

Some Journal and new letters on testudines
Chelonian conservation and biology, published by the Chelonian Research Foundation.
Testudo Journal of the British Chelonian Group
Tortoises and Turtles, IUCN

Tortoises Action Plan
Appendix I

Bones and scutes of turtle carapace and plastron

Source: Zhao & Adler, 1993.
Appendix II

Key to the Turtles of Sri Lanka

Caretta caretta (shell)

Shell leathery without scales

Shell hard with scales

With ridges

Without ridges

Predorsal short

Predorsal long

Leatherback Turtle

Dermochelys coriacea

Loggerhead Turtle

Caretta caretta

Olive Ridley Turtle

Lepidochelys olivacea

Oxysternon ridleyi

Oxysternon foraudii

Oxysternon hilarii

Green Turtle

Chelonia mydas

Flatback Turtle

Natator depressa

Source: Modified from, Indo-Pacific marine turtles, Greenpeace, 1991
Appendix III
Some Marine Turtle Nesting Localities in Sri Lanka

Legend
Localities where all 5 species are known to nest
Nesting coast

Source: After Deraniyagala (1939); Ranger, Richardson and Jayaweera (ND)

Turtles Action Plan
Appendix IV

Distribution of Land turtles

Dry Zone

1st Peninsular (Hipposaurus level up to 2.75 m)

Anuradhapura

Polonnaruwa

Intermediate Zone

3rd Peninsular
(Age 510-2420 m)

Wet Zone

Known habitats of Mauremys bengalensis

1st Peninsular: Approximate distribution of Kinosternon pyriforme

1st & 2nd Peninsular: Approximate distribution of Mauremys bengalensis

Testudines Action Plan

roup,

ornia
Appendix V

Distribution of *Geochelone elegans*

Source: de Silva, 1996
Appendix VI
Coastal Habitats of Sri Lanka
(Modified from National Atlas of Sri Lanka)

Legend

.: Seagrass beds
☐ Coral reefs
△ Mangroves
► Estuaries and Lagoons
1 - 34 Main rivers
Appendix VII
Some Marine Turtle Hatcheries of Sri Lanka

(The source is given within parenthesis, it is possible that some of the hatcheries listed may not be functioning at present)


4. Tangalla Bay Hotel Hatchery (Wickramasinghe, 1983)

5. Kosgoda Hatchery (Wickramasinghe, 1982)

6. Koggala Beach Hotel, Koggala. (Richardson, 1995)

7. The Strand Hotel, Yaddchimulla, Unawatuna. (Weerasinghe & Walker, 1995)

8. Sea Turtle Hatchery and Research Centre, Dodanduwa. (Richardson, 1995)

9. Triton Hotel, Ahungalla. (Richardson, 1995)

10. Sunset Restaurant, Ahungalla beach (north of the Triton) Hotel. (Richardson, 1995)

11. Hibiscus Restaurant, Ahungalla beach. (north of the Triton) Hotel. (Richardson, 1995)


15. Sea Turtle Protection Association, Galle Road, Bentota South. (Ref. Wickramasinghe, 1981)
16. Sea Turtle Hatchery and Research Centre, Galle Road, Induruwa. (Richardson, 1995)
17. Robinson Club, Galle Road, Bentota. (Ref. Wickramasinghe, 1982)
18. Neptune Hotel, Galle Road, Beruwala. (Ref. Wickramasinghe, 1982)
19. Mount Lavinia Hotel, Mount Lavinia, Colombo. (Richardson, 1995)
20. St. Thomas’s College Hatchery, Mount Lavinia, Colombo. (Richardson, 1995)
21. Aquatic Resort, Pamballa, Chilaw. (Fernando, 1993)
23. Wellawatta (Siri Wickramasinghe's Private Hatchery) (Wickramasinghe 1982)
24. Moratuwa Turtle Farm (Richardson, 1995)

Appendix VIII
Specialist chelonian organization

Marine Turtle Specialist group and tortoise and Freshwater Turtle Specialist Group, IUCN/SSC, Gland Switzerland.

IUCN/SSC South Asian Reptile and Amphibian Specialist Group.
Centre for Herpetology, Mamallapuram - 603 104, South India.

California Turtle and Tortoise Club, P.O. Box 8952, Fountain Valley, California 92708 USA
Desert Tortoise Council, P.O. Box 1738, Palm Desert, CA 92261, USA

Endangered Turtle Protection Foundation, P.O.Box 417, Greenville, DE 18807, USA

Gopher Tortoise Council, 611 N.W. 79th Drive, Gainesville, Florida, FL 32607, USA

Interessengemeinschaft Schildkroten Schutz, Kelterbacherstr. 24, D-5138 Heinsberg-Grebben, West Germany

Lubbock Turtle and Tortoise Society, 5/08 64th Street, Lubbock, Texas, TX 79424, USA

National Turtle and Tortoise Society Inc., P.O. Box 98068-9806, USA

New York Turtle and Tortoise Society, 163 Amsterdam Avenue, Suite 365 New York, NY 10023, USA

San Diego Turtle and Tortoise Society, 15963 Lyons Valley Road, Jamul, California, CA 92035-9607, USA

S.O.P.T.O.M., Village des Tortues, B.P. 24, 3590 Gonfaron, France

The Tortoise Trust, BM Tortoise, London, WC1N 3XX, England

Tortoise Survival Project, c/o The Tortoise Trust, BM Tortoise, London WC1N 3XX, England

Turtle Organisation of San Luis Obispo, P.O.Box3208, Shell Beach, CA 93449, USA

Turtle and Tortoise Club of Santa Barbara, P.O.Box 70745, Santa Barbara, CA 93160, USA

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