NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

STATE OF QATAR

OCTOBER 2004

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Appreciation is also extended to the Scientific and Applied Research Center (SARC), Government Ministries, institutions and individuals who contributed to the National Biodiversity Strategy and Action Plan for the State of Qatar.

ACRONYMS

BD - Biodiversity
CBD – Convention on Biological Diversity
EIA – Environmental Impact Assessment
EMS - Environmental Monitoring Section
IUCN – The World Conservation Union
MEA – Multilateral Environmental Agreements
MMU - Marine Monitoring Unit
MMAA – Ministry of Municipal Affairs and Agriculture
NBSAP – National Biodiversity Strategy and Action Plan
NGO – Non-Governmental Organization
QMEMP - Qatar Marine Environment Monitoring Program
ROPME – Regional Organization for Protection of the Marine Environment
SARC – Scientific and Applied Research Center
SCENR – Supreme Council for the Environment and Natural Reserves
TAD - Technical Affairs Department (SCENR)
TOR – Terms of Reference

EXECUTIVE SUMMARY

Purpose

The purpose of the National Biodiversity Strategy and Action Plan (NBSAP) is to promote the conservation of biodiversity, sustainable use of natural resources and equitable sharing of the benefits of biodiversity in the State of Qatar. The NBSAP is directly linked to sustainable development and poverty alleviation.

The all-inclusive approach of Islam to man, without any discrimination based on time, age, place or race; and Islam's approach to the universe, regarding the welfare of the whole without excluding from consideration any of its parts; is the essence of the ecological consciousness that is needed. In this respect the CBD is in line with the approach of Islam to man and the environment.

Strategic Goals

The NBSAP contains eleven strategic goals that identify the most pressing biodiversity issues in Qatar. Each of the goals is supported by an action plan that is composed of a series of proposed short term and long term activities that can be developed into practical projects. Each goal is also followed by monitoring indicators and responsible institutions.

The first strategic goal deals with expanding the national system of terrestrial and marine protected areas to protect representative examples of all of the major ecosystems, key biological sites and species of special management concern in Qatar. The major activities recommended are to develop a protected area system plan, prepare management plans, strengthen community participation and public awareness.

The second strategic goal stresses the need to develop sustainable nature based tourism in the natural and scenic areas of Qatar and includes the selection of suitable areas with basic facilities and visitor centers, training local residents to become guides and promoting the equitable sharing of revenue with the local community.

The third strategic goal is to protect and conserve living marine and coastal resources for the development of a sustainable marine fishing and recreation industry in Qatar. For this the authorities will need to apply laws that regulate fishing, control pollution, reduce grazing the mangroves and develop an integrated coastal zone plan.

The fourth strategic goal focuses on combating desertification by improving the management of desert rangelands through controlled grazing schedules, reduced number of grazing animals and replicating the lessons of the ancient hima systems.

The fifth strategic goal also deals with combating desertification by conserving agro-biodiversity and promoting sustainable development in rural areas through protecting local varieties of plants, improving irrigation practices and limiting the conversion of agricultural and grazing land to residential areas.

The sixth strategic goal focuses on enforcing environmental legislation that conserves and sustainably uses biodiversity in Qatar by establishing a legal mechanism for implementing the strategy, strengthening law enforcement and reviewing existing legislation against the obligations of the CBD.

The seventh strategic goal is to support scientific research and establish data base centers that provide decision makers with accurate facts on the status and trends of biodiversity in Qatar. The major activities recommended are more field surveys, research grants and the publication of information on status of species.

The eighth strategic goal looks at biodiversity education and public awareness campaigns which reflect the role of biodiversity conservation in the welfare of the citizens of Qatar. Some of the awareness activities are to prepare a well illustrated short version of the NBSAP and organize briefing sessions for decision makers. In the formal education sector there is a need to provide academic institutions and libraries with environmental literature, to upgrade curricula and teachers on biodiversity issues, and to organize outdoor activities that would introduce students to biodiversity.

The ninth strategic goal stresses the need to protect natural ecosystems and human health from the planned introduction and/or accidental release of invasive alien species and Genetically Modified Organisms (GMOs). This is best accomplished by preventing the importation of invasive alien species by means of a system of reliable certification identifying the species and its origin and of improved knowledge of biosafety issues by requiring certificates of origin and specifications of imported food.

The tenth strategic goal is concerned with activating environmental monitoring and impact assessments (EIA) to make sure that the conditions for the conservation of biodiversity and its sustainable use are being taken into consideration in all development projects by finalizing rules, regulations and guidelines on EIA.

The eleventh strategic goal is to study, compare, and promote synergy among the various multilateral environmental agreements (MEAs) and regional environmental agreements ratified by Qatar. The challenge is to harness the potential synergies among the various MEAs and integrate them in a "mainstream" planning process.

Mechanism of Implementation

Qatar fully realizes that NBSAPs need to be designed and implemented through partnerships - where the different parties work together as partners and not as competitors. In such partnerships, the roles and responsibilities of all stakeholders, as well as their agreement on modes of collaboration, must be properly defined to avoid conflict.

The Supreme Council for the Environment and Natural Resources (SCENR) will be entrusted with developing, financing and monitoring an annual list of projects that embody the goals of biodiversity conservation and sustainable use as identified in this NBSAP.

The emphasis on "projects" as the principal implementation mechanism is based on the need for the SCENR to direct activities with definite terms of reference, timetables and payment schedules. Without these factors it is easy to lose tract of such projects.

In order for the SCENR to develop, finance and monitor an annual list of project proposals all concerned ministries, organizations and institutions in Qatar need to prepare detailed action plans/project proposals. These plans/proposals will need to reflect the level of experience, human resources and budgets those institutions are prepared to commit to conserve and sustainably use biodiversity. This process will require the full time effort of a National Coordinator supported by a Coordination Unit located in the SCENR.

The success of the NBSAP will depend on the level of budget allocations set aside by SCENR as well as those of concerned ministries, organizations and institutions for the preparation and implementation of detailed action plans/project proposals.

It would also be useful for the SCENR to consider new and innovative sources of funding for the NBSAP such as: a) charging for ecosystem services; b) the introduction of new taxes, fees and royalties (for example on oil and gas exploitation); c) the return of a proportion of the fees paid for fishing licenses and hunting permits to conservation activities.

Another factor that will contribute to the success of the NBSAP is active stakeholder participation that needs to be built up over time. The Coordination Unit must extend an open invitation to all institutional and non-institutional stakeholders to join meetings and express their opinions. However, during the intervals between meetings, SCENR staff should visit all interested stakeholders and advise them on how to implement the NBSAP.

In the long term, improvements to the conservation and sustainable use of biodiversity can only come about by incorporating biodiversity considerations into regular programs and activities of sectoral departments.

The NBSAP needs to be viewed as a dynamic and cyclical document that will be reviewed and revised at regular intervals. Considering the pace of change that Qatar is undergoing, a review and revision period of five years is recommended.

PART ONE
INTRODUCTION

1-1 PURPOSE AND SCOPE OF THE STRATEGY

Purpose

The purpose of the National Biodiversity Strategy and Action Plan (NBSAP) is to promote the conservation of biodiversity, sustainable use of natural resources and equitable sharing of the benefits of biodiversity in the State of Qatar. The NBSAP is directly linked to sustainable development and poverty alleviation.

The NBSAP will be guided by Article 33 of the new Constitution for the State of Qatar that clearly says **"The State shall conserve the environment and its natural balance for the comprehensive and sustainable use of its resources for all generations".**

As a party to the Convention on Biological Diversity (CBD), Qatar is committed to take a holistic, cross-sectoral and ecosystem based approach to halting the loss of biodiversity. It is important to note that even though the Convention is a global treaty it emphasizes decision making at the national level.

Article 6 of the CBD requires each nation to:

a) "Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes".
b) "Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies".

Scope

The scope of the NBSAP is very broad and includes the protection, restoration, sustainable use, equitable sharing, and monitoring of Qatar's biodiversity. Because the NBSAP covers many issues and touches many interests, it will require the participation of all national sectors in Qatar.

The implementation of this Strategy will require a high level of political support to promote the integration of legislation, sectoral policies, as well as coordination between government, non-governmental organizations, and the private sector. It will also require a review of SCENR's *Terrestrial Conservation Strategy*, *Marine Conservation Strategy*, *Air Conservation Strategy* and the *Qatar Marine Environment Monitoring Program* as well as the comprehensive study *Environmental Assessment and Action Plan for Qatari Environment* commissioned by the Supreme Council for the Environment and Natural Resources.

1-2 PRINCIPLES THAT GUIDE THE STRATEGY

Islam and the Importance of Nature Conservation

"There is no creature crawling on the earth, nor bird flying with its wings, but they are nations like yourselves"
(Holy Qur'an, Surat Al-Anaam #38)

The conservation of the natural environment is an imperative commanded by Allah. The protection of the natural environment from abuse by man leads to the welfare of man himself together with the welfare of all other beings created by Allah.

The Qur'an has made it clear that each thing and every creature in the universe, whether known to man or not, performs two major functions: a religious function in so far as it evidences the Maker's presence and infinite wisdom, power and grace; and a social function in the service of man and other created beings.

As we cannot be aware of the beneficial functions of all things created by Allah, we cannot base our conservation efforts solely on their benefits to man because this would lead to a distortion of the dynamic equilibrium set by Allah. However when we base the conservation and protection of the environment on its value as the signs of the Creator, we cannot omit anything, for every element and species has its individual role to play.

Man should not ignore his responsibility of stewardship on earth. It is only when our ethical horizons extend to embrace not only mankind, but all generations and created beings, that we can perform the noble role of stewardship on earth.

In seeking material or economic benefit the contemporary generation must not undertake any activity with uncertain consequences that could sacrifice the needs of future generations. Similarly man should never eliminate any species from the face of the earth or bring about irreparable damage to the life sustaining ecosystems of the planet.

The all-inclusive approach of Islam to man, without any discrimination based on time, age, place or race; and Islam's approach to the universe, regarding the welfare of the whole without excluding from consideration any of its parts; is the essence of the ecological consciousness that is so sorely needed for the deliverance of the human race.

Islamic Principles for the Conservation of Nature

1. Conservation of the natural environment is a moral and ethical imperative.
Environmental problems cannot be solved through knowledge and technology alone. Only moral conviction and ethical consciousness, on both individual and social levels, can motivate people to forgo some of the short term profits of this life, and to make personal sacrifices for the common good.

2. Ethical teachings should be backed by legislation and effective enforcement of injunctions and prohibitions.
The force of law and political authority are indispensable to bring about justice and equity in the allocation and distribution of natural resources and in implementing the measures required for the protection and conservation of the earth.

3. The development of the earth should be planned and implemented in accordance with natural constraints, ecological values and sensitivities.
Planning for development should in every case include analysis of environmental impacts and be designed to minimize damage to the natural environment and depletion of natural resources.

4. Ecologically sustainable economic development needs to integrate social and economic practices acceptable to local populations.
Conservation divorced from sustainable development is neither socially acceptable nor economically viable. People's rights to harvest and extract the natural resources on which society depends should be allocated according to the effort they invest in the beneficial use and conservation of these resources.

5. Scientific and technical knowledge of the natural environment and its conservation should continually be improved and developed.
Accurate information is indispensable to enlightened decisions for the conservation of the natural environment. This will help us to avoid acts that lead to its destruction and the precautionary principle should be adopted before and after harm has occurred.

6. Development projects undertaken in one country should not lead to damage or harm in the natural environment of another country.
National, local or private development projects should not be implemented if they will cause injury to others in neighboring countries.

7. **The natural environment and natural resources should not be subjected to any irreparable damage resulting from military actions.**
Man has no right to exploit or damage natural resources in such a way as to spoil the food bases and other sources of subsistence for living beings, or expose them to destruction and defilement as may happen in a military confrontation.

The principles of CBD are thus consistent with those of Islam particularly as regards the imperative to conserve nature, to respond to the needs of society (now and in the future), to integrate social and economic practices acceptable to local populations and to improve and develop scientific and technical knowledge.

1-3 OVERVIEW OF THE PLANNING PROCESS

1-3-1 Guidelines for the Preparation of the NBSAP

1- The Strategy should emphasize that the State of Qatar has given a very high level of prominence to environmental issues in the country as reflected in the Constitution, it Laws and establishment of the SCENR.

2- The SCENR has already defined clear priority areas. They are the conservation of the terrestrial, marine and air environments of Qatar. Three separate strategies have already been formulated for those three areas.

3- The SCENR followed the standard planning process called for in the CBD for the preparation a NBSAP:

- Data Gathering / Situation Analysis (entrusted to SARC)
- Option Identification and Analysis (entrusted to SARC)
- Formulation of the National Strategy (entrusted to IUCN)
- Formulation of the Action Plan (entrusted to IUCN)
- NBSAP Implementation (responsibility of SCENR)
- NBSAP Monitoring/Evaluation/Reporting (responsibility of SCENR)

4- The nature reserves in Qatar should feature prominently in the NBSAP particularly as they relate to promoting ecotourism. Three sites deserve special mention, namely the Shahaniah Park and the Gazelle and Oryx Breeding Centers at Ras Oshairij and Mas-habiya.

5- The contribution of the private sector to ecotourism development is relevant to the NBSAP. The Al Wabra Wildlife Preservation center that is owned by Sheikh Saoud Bin Mohamad Bin Ali Al-Thani is a unique and most successful captive breeding center for birds and mammals from around the world. The Museum of Sheikh Faisal Bin Jasem Al-Thani is another example of the important role that individuals and businesses can play in the conservation of the natural and cultural heritage of Qatar.

6- The Focal Points for the major 5 MEAs are located in the SCENR. Each multilateral environmental agreement should continue to have its own focal point but they all need to come together on a regular basis and work towards the preparation and implementation of the NBSAP.

7- The SCENR wants a simple yet comprehensive Strategy that covers the major biodiversity issues identified by the people of Qatar and gives particular attention to development and implementation of a practical Action Plan that is composed of a series of biodiversity projects and activities financed and monitored by the SCENR.

1-3-2 Institutional Structures for the Development and Implementation of the NBSAP

The preparation of a national biodiversity strategy required the SCENR to mobilize human, institutional and financial resources over a period of many months. During that time a number of existing structures were modified and existing structures established to guide the planning process namely:

1- A **Steering Committee** was appointed by the SCENR for the development and eventual implementation of the NBSAP.
The Steering Committee is composed of:

1- Secretary General of the SCENR - Chairman
2- National Coordinator of the NBSAP – Secretary
3- Representative of SCENR
4- Representative of Ministry of Municipal Affairs and Agriculture
5- Representative of Ministry of Interior (Coast Guard Division)
6- Representative of Planning Council
7- Representative of Tourism Authority
8- Representative of SARC
9- Representative of NGOs
10- Representative of Central Municipal Council

The Terms of Reference for the Steering Committee are:

1- Provide high level guidance for strategy and action plan development
2- Raise awareness of NBSAP strategy within high levels government
3- Ensure that NBSAP development is in compliance with the CBD
4- Facilitate the work of the planning entities (planning committee, national coordinator, national consultants) and ensure access to archives and information held by their parent institutions
5- Participate in national NBSAP workshops
6- Each Steering committee member should serve as focal point within their parent organization for NBSAP development activities
7- Ensure that the NBSAP will become a formal government policy whose implementation is adopted by a number of government ministries and organizations.

2- A **National Coordinator** was appointed to coordinate the activities that contribute to the development of the NBSAP.

3- An **External Consultant** from IUCN was entrusted with the task of assisting the SCENR with the task of compiling the NBSAP.

4- A **Working Group on Biodiversity** from within the staff of the SCENR were named to assist the IUCN External Consultant with compiling the NBSAP and therefore benefit from the experience.

5- A number of Ad hoc **Scientific Committees** were appointed by the SARC to prepare the Biodiversity Study for Qatar. This Study was commissioned by the SCENR to provide the data needed for the compilation of the NBSAP.

1-3-3 The NBSAP Preparatory Process

First step in the NBSAP preparatory process was the visit of an IUCN consultant in 1998 and the subsequent preparation of a Workplan for the Development of a Biodiversity Strategy and Action Plan for the State of Qatar.

Second step was the agreement signed between the SCENR and SARC on 4 Nov. 2001 wherein the SARC agrees to prepare a Biodiversity Study to collect and analyze documents and sources of information on biodiversity; identify gaps in the available body of information; and develop action plans for the conservation of biodiversity.

The Biodiversity Study was completed in 2003 and presented in three volumes:

First Volume: Assessment of the Biodiversity Inventory
Second Volume: Economic Assessment
Environmental Laws and the Protection of Biological Diversity in Qatar; Short and Long Term Plan of the NBSAP.
Third Volume: Checklist of the Biodiversity of Qatar
Terrestrial Flowering Plants; Soil Fungi; Terrestrial Animals; Marine Flora and Fauna; Animal Parasites of Fish; Agriculture in Qatar.

The final version of the Biodiversity Study was submitted by SARC in June 2004.

Third step began in March 2003 with the signed agreement between IUCN and SCENR wherein IUCN, through a Senior Consultant, will guide, technically assist and oversee the preparation of the National Biodiversity Strategy and Action Plan for the State of Qatar, working closely with the National Project Coordinator. To this end, the Senior Consultant will undertake three missions to the State of Qatar. The role of IUCN will end in October 2004 with the submission of the final version of the NBSAP that has been approved by the Steering Committee and reviewed by IUCN.

1-3-4 Other Activities Relevant to the Preparatory Process

Lecture at SARC – April 2003

An open lecture on the "Biodiversity Planning Process" was suggested by the SCENR. It was hosted at the SARC and attended by over fifty professional men and women involved in biodiversity issues.

Terrestrial and Marine Meetings at SCENR - April 2003

The IUCN Consultant was asked to join the discussions at two relevant meetings that discussed various aspects of the Terrestrial and Marine Strategies prepared by the SCENR.

SARC Seminar on "Biodiversity Assessment"- December 2003

A one day seminar was held on 24 December 2003 at the SARC where a final report was presented by the Qatar University Staff to fulfill their obligations to the SCENR.

Meetings with Members of Working Group on Biodiversity (Dec 2003)

First Meeting: It was decided to prepare a Short Draft of the NBSAP (in both Arabic and English) to be distributed to the participants of the First National Workshop.

Second Meeting: It was decided that a verbal presentation of the First Draft of the NBSAP during the First National Workshop (29 Dec 2003) would be advisable because many of the attendees have not had the time to read the document. It was also decided that the presentation would be entirely in Arabic.

Third Meeting: The Consultant insisted on involving the members of the Work Group in the First National Workshop and a rehearsal was held to make sure the presentations went smoothly:

Fourth Meeting: During the last meeting of the Working Group on 30 Dec 2003 the outcomes of the First National Workshop was discussed. Mr. Ghanem Abdulla Mohammed suggested to include Combating Desertification to the strategic goals.

First National Workshop (Dec 2003)

The First Workshop was held on Monday 29 December 2003 at the Sheraton Hotel in Doha from 9am to 1 pm to introduce the First Draft of the National Biodiversity Strategy and Action Plan. It was attended by over 90 invited participants representing the various government ministries and agencies in Qatar.

Part One - Introduction to Biodiversity Strategy (Mr. Ghanem Abdulla Mohammed)
Part Two - Status and Threats to Biodiversity in Qatar (Dr. Qasem Al-Qahtani)
Part Three –Conserving Biodiversity (Mr. Faisal Abu-Izzeddin)
Part Four – Promoting Sustainable Use of Biodiversity (Mr. Faisal Abu-Izzeddin)
Part Five – Supporting Long-Term Survival of Biodiversity (Mr.Faisal Abu-Izzeddin)
Part Six - Mechanisms to Implement the Strategy (Mr. Nasser Al-Muraikhi)
Discussion of the Strategy

In the Opening Session Mr. Shafi Al-Shafi, representing the Secretary General of SCENR, welcomed the participants. The Discussion of the Strategy elicited more comments and suggestions than anticipated and a number of thoughtful suggestions were very welcome. A few of the participants prepared written comments and submitted them after the meeting. Based on the comments and suggestions received at the workshop a Second Draft of the NBSAP was prepared.

The newspaper coverage of the First National Workshop in the daily papers in Qatar, in both Arabic and English, was ample and very encouraging.

Peer Review of the NBSAP (Feb 2004)

The Second Draft of the NBSAP was sent by IUCN to three independent reviewers who read and commented on the structure and content of the strategy. Their comments were incorporated into the Third Draft of the NBSAP.

Orientation Visits to Major Stakeholders (Sept 2004)

Based on the recommendation of the IUCN Consultant, the distribution of the summary of the Third Draft of the NBSAP (in Arabic and English) took place between 21 - 26 September 2004 and was combined with a consultation processes that included visits to the major stakeholders (ministries, agencies, organizations and institutions). The members of the Working Group at the SCENR utilized these visits to get to know their colleagues and impress on them the importance of the NBSAP and of attending the upcoming Second National Workshop.

Second National Workshop (Sept 2004)

The Second National Workshop was held on Monday 27 September 2004 at the Sheraton Hotel in Doha from 8am to 12:30 pm to introduce the Third Draft of the National Biodiversity Strategy and Action Plan. It was attended by over 60 invited participants representing the various government ministries and agencies in Qatar.

Part One - Introduction to the Biodiversity Strategy (Mr. Ghanem Abdulla Mohammed)
Part Two – Introduction to IUCN (Dr Odeh Al-Jayyusi)
Part Three – Review of the Third Draft of the NBSAP (Mr. Faisal Abu-Izzeddin)
Part Four – Discussion of the Strategy

Meeting with the Secretary General (Sept 2004)

Directly after the conclusion of the Second National Workshop Mr. Khalid Al-Ali had a meeting with Dr. Odeh Al-Jayyusi, Mr. Faisal Abu-Izzeddin, Mr. Ghanem Abdulla Mohammed and Mr. Sultan Al-Jamali. The NBSAP was discussed and Mr. Al-Ali requested that the strategy be completed and translated to Arabic as soon as possible.

Final Meeting with the Working Group (Sept 2004)

The Working Group had a long meeting on 28 Sept 2004 to go through the NBSAP. They suggested a number of useful changes that reflected what had been learned during the visits with stakeholders, the Second National Workshop and the meeting with the Secretary General.

PART TWO
STATUS AND THREATS

2-1 TERRESTRIAL BIODIVERSITY

Background

Qatar is a peninsula, about 180 km long and 85 km wide covering a land area of 11,437 sq. km, surrounded on three sides by the waters of the Arabian Gulf. Its only land connection is Saudi Arabia to the south. The landscape of Qatar is generally flat and land elevation ranges between 6-103 meters above sea level. Rocky hills and sand dunes are found mostly in the south and saline swampy mud flats are common along the coast.

Qatar is classified as a hot subtropical desert. Average rainfall is 81 mm, average maximum temperature is 31 C and average minimum is 22 C. It has no rivers or lakes and the primary sources of water are rainfall and ground water. The flora and fauna of Qatar are unique and well adapted to the hot and arid environment.

The basic habitat types to be found in Qatar include: mangroves, sabkha (salt marshes), sand dunes, Hammada desert (rocks and gravel), rocky ecosystems, wadis and runnells, and depressions that collect fine sand.

The SCENR prepared the **Strategy for the Protection of Terrestrial Environment in Qatar** (2002). The Strategy is based on scientific evidence that the environment is able to revert to its normal condition if the threats and pressures exerted on it are removed and the social fact that the people of Qatar are attached to their terrestrial environment and to the land that they have historically frequented for hunting, gathering and recreation.

Desertification - Approximately 18% of the land surface is covered by sand dunes or sand, and desertification is an issue. Desertification is enhanced by uncontrolled livestock grazing, irrigation with high saline water, and encroachment of sand areas.

Status of Wild Terrestrial Flora and Fauna

Approximately 1900 documented species have been identified in Qatar including about 1000 terrestrial and 900 marine species. The biodiversity inventory indicates that about 78% of terrestrial species in Qatar are rare.

Number of Terrestrial Species	
8 Species of Mammals	
371 Species of Plants	
242 Species of Birds	
142 Species of Fungi	
1 Species of Amphibians	
228 Species of Invertebrates	
29 Species of Reptiles	(adapted from Abushama et. al. 2002)

Qatar has a terrestrial plant diversity consisting of 371 species of flowering plants belonging to 236 genera in 61 families (Qatar Biodiversity Inventory 2003).

Terrestrial Vegetation Communities

- Rocky deserts with shallow compact soils
- Rocky deserts interchanging with sandy mounds
- Disturbed areas
- Depressions of deep silty clay loam to clay loam soils
- Depressions of shallow silty clay loam to clay loam soils
- Depressions of sandy to sandy loam soils
- Depressions of wastewater and stagnant water
- Salt flats
- Mobile sandy mounds /sand dunes

(adapted from Abulfatih et. al. 2001;Abushama et. al. 2002)

According to the IUCN Red List and the UNEP-WCMC species database and the Qatar Biodiversity Inventory, about 26 Qatari species are at various levels of risk.

Terrestrial Species at Risk in Qatar

Endangered
Arabian Oryx *Oryx leucoryx*

Vulnerable
Greater Spotted Eagle *Aquila clanga*
Lesser Kestrel *Falco naumanni*
Corn Crake *Crex crex*
Sociable Lapwing *Vanellus gregarius*
Socotra Cormorant *Phalacrocorax nigrogularis*

Lower Risk - near threatened
Great Snipe *Gallinago media*
Ferruginous Duck *Aythya nyroca*
Pale Harrier *Circus macrourus*
Cinereous Bunting *Emberiza cineracea*
Houbara Bustard *Chlamydotis undulata*

Data Deficient
Black-winged Pratincole *Glareola nordmanni*

Threats to Wild Terrestrial Flora and Fauna

THREAT	DESCRIPTION
Hunting and Collecting	Several species are currently endangered or extinct in the wild as a result of intense hunting pressure with modern techniques. Examples include gazelle, oryx and houbara bustards. Collecting sea turtle eggs as well as bird eggs on the coastline and islands of Qatar have hindered the ability of these species to reproduce.
Habitat Loss	The terrestrial ecosystems of Qatar are under pressure however background information is generally lacking. The Al Khor and Al Dhakirah mangrove wetlands have several land-use issues such as encroachment by villas, sewage effluent, rubbish disposal and land reclamation. The widespread building of animal pens (isba) in rangeland areas has caused a marked deterioration of the terrestrial environment. This is most evident in the reduction of plant cover and drifting soil as well as the increase in paper, garbage and other building materials and residues in the areas surrounding those county retreats. In 2002 the number of these country retreats was estimated at 1764.
Pollution	In some locations pollution from the oil and gas industry is having negative impact on species diversity. Other pollutants include sewage and garbage that is causing the loss of physical habitat. Pollutants in the environment can impact components of biodiversity potentially causing increased mortality or diminished reproductive success.
Awareness	Lack of sufficient awareness about biodiversity and the importance of wild flora and fauna is considered a genuine threat to the survival of these species in the future.

2-2 MARINE AND COASTAL BIODIVERSITY

Background

The marine environment in Qatar is historically important and constitutes a cultural symbol and a natural source of food, water and wealth for the people of Qatar.

Qatar is surrounded by sea water on three sides extending for a distance of 700 km. Qatar's territorial waters (also referred to as the exclusive economic zone) encompass some 35,000 km 2 surrounding the peninsula. Coastal waters are extremely shallow, averaging 30 m along the northern and eastern coastlines, and only 20 m along the western coastline.

The sea bottom sediments consist of compacted sands (45%), a mixture of sand and mud (45%), or coral. Coral is typically found on hard sediments, while sea grass may be found on unconsolidated sediments.

Fisheries play an important role in the economy of Qatar in terms of consumption and production. The contribution of marine fisheries to the agriculture sector from 1995-1999 was about 11.1%. Total local production of fish varied between 4271 tons to 5425 tons during the period from 1995 to 1999. The value of the fish consumed in Qatar during 1999 was 6.2 million Q R (SARC-Economic Assessment 2002).

Several areas of environmental significance have been identified in Qatar including barchan dunes, Khor Al Odaid, seagrass beds, coral reefs, mangrove swamps near Al Thakhira, and other locations. However there are few marine ecological conservation areas in Qatar.

Status of Marine Flora and Fauna

About 955 marine species have been noted in Qatar.

Number of Marine Species	
379 Species of Invertebrates	
20 Species of Birds	
136 Species of Fish	
15 Species of Reptile	
402 Species of Flora	
3 Species of Mammals	(adapted from Abushama et. al. 2002)

Marine life has had to adapt to the relatively harsh conditions of the Gulf with high average temperatures and high salinity. In addition, the Arabian Gulf is considered an environmentally sensitive area due to its relatively small volume and limited exchange of water.

Coastal Vegetation Communities	
❖ Mangrove intertidal	
❖ Low salt marsh coastal	
❖ High salt marsh coastal	
❖ Sandy coastal	
❖ Sandy-rocky coastal	(after Abulfatih 2001; Abushama et. al. 2002)

The 22 Species at risk in Qatar are mostly marine species. A systematic determination of risk using national criteria for Qatar would likely identify a greater number of species at risk.

Marine Species at Risk in Qatar

Critically Endangered
Hawksbill Turtle *Eretmochelys imbricata*
Leatherback Turtle *Dermochelys coriacea*

Endangered
Green Turtle *Chelonia mydas*
Loggerhead Turtle *Caretta caretta*
Olive Ridley Turtle *Lepidochelys olivacea*

Vulnerable
Dugong *Dugong dugong*
Blacktip Shark *Carcharhinus limbatus*
Brown Shark *Carcharhinus plumbeus*

Data Deficient
Black Finless Porpoise *Neophocaena phocaenoides*
Indo-Pacific Humpback Dolphin *Sousa chinensis*

Sea Turtles
Both the critically endangered hawksbill turtle *(Eretmochelys imbricata*) and the endangered green sea turtle *(Chelonia mydas*) are reported to occur in Qatari waters.
Further information on sea turtles in Qatar is limited and their habitat usage is generally unknown (Abushama et. al., 2002). Sea turtles are known to nest near Ras Laffan Industrial City. More recently either green sea turtles or hawksbill turtles have been reported to nest on beaches near Al Dhakirah (Aspinall et. al., 2002).

Dugong and Socotra cormorant
The dugong *(Dugong dugon*) and Socotra cormorant *(Phalacrocorax nigrogularis*) are both listed as vulnerable (IUCN, 2000) and have a significant population in Qatar. Yet detailed information on their habitat usage in Qatar is lacking. The Socotra cormorant may breed in significant numbers but little information is available to verify this possibility.

Mangroves
The main species used for plantations is *Avicennia marina* that grows well in Qatar, seeds itself naturally and grows to a height of 2-3 meters. The mangrove plantation at Umm al Hul was established on a barren but protected site. It appears that mangrove plantations work best on the east coast where water salinity is lower (4.3-4.4%) compared to the west coast where salinity can rise to 6%. The plantations carried out by the MMAA succeed best in inlets where the young plants are protected from wave action. In addition to Umm al Hul there are two other successful reforestation areas namely Al Mafjar and Fuwairat.

Threats to Marine and Coastal Flora and Fauna

It is difficult to assess the magnitude of all potential threats to Qatar's coastal waters due to the lack of specific data and the absence of an effluent monitoring plan which can be used to verify the performance of industry. However several potential threats or impacts have been identified based on observed practices.

THREATS	DESCRIPTION
Habitat Loss	The loss of habitat through actions such as ocean infilling, dredging and sedimentation is the primary cause of the increase in endangered species around the world. The Al Khor and Al Dhakirah mangrove wetlands have several land-use issues such as encroachment by villas, sewage effluent, rubbish disposal and land reclamation.
Over Exploitation	The over exploitation of fish stocks is a common threat to marine ecosystems throughout the Arabian Gulf. The total local catch of fish in Qatar increased from 4271.3 tonnes in 1995 to 7139.6 tonnes in 2000 for an increase of approximately 67% since 1995 (Qatar, 2000). However the total catch of some species declined, for example Needle Fish and Parrot Fish which dropped by 95% and 86% respectively, over the same time period (Qatar, 2000).
Pollution	Pollutants in the environment can impact the components of biodiversity causing increased mortality or diminished reproductive success. **Onshore Discharges** Industrial: Based on available data it is clear that some wastewater effluents are having a negative impact on aquatic life in the receiving waters. Wastewater: Wastewaters containing chlorine are frequently discharged to the sea. There are two primary types of effluents, cooling waters which contain chlorine to prevent biofouling, and domestic sewage chlorinated to kill pathogens prior to discharge. **Offshore Spills and Ship Ballast** Spills: It appears that QGPC is the primary party responsible for responding to spills in the marine environment. Pipeline releases do not have a clearly identifiable responsible party. Ship Ballast: Current guidelines (Qatar Env. Standards) govern the concentration of general contaminants and water chemistry in ballast waters prior to discharge. There is no testing for invasive alien species.

PART THREE
STRATEGIC GOALS AND ACTION PLANS

Summary of Strategic Goals

	TITLE	STRATEGIC GOAL
3-1	**PROTECTED AREAS**	**To expand the national system of terrestrial and marine protected areas to protect representative examples of all of the major ecosystems, key biological sites and species of special management concern in Qatar**
3-2	**ECOTOURISM SITES AND FACILITIES**	**To develop sustainable nature based tourism in the natural and scenic areas of Qatar**
3-3	**MARINE AND COASTAL RESOURCES**	**To protect and conserve living marine and coastal resources for the development of a sustainable marine fishing and recreation industry in Qatar**
3-4	**RANGELANDS AND DESERTIFICATION**	**To combat desertification by improving the management of desert rangelands**
3-5	**AGRO-BIODIVERSITY AND DESERTIFICATION**	**To combat desertification by conserving agro-biodiversity and promoting sustainable development in rural areas**
3-6	**ENVIRONMENTAL LEGISLATION**	**To enforce environmental legislation that conserves and sustainably uses biodiversity in Qatar**
3-7	**SCIENTIFIC RESEARCH**	**To support scientific research and establish data base centers that provide decision makers with accurate facts on the status and trends of biodiversity in Qatar**
3-8	**EDUCATION AND PUBLIC AWARENESS**	**To upgrade biodiversity education and public awareness campaigns which reflect the role of biodiversity conservation in the welfare of the citizens of Qatar**

3-9	**INVASIVE ALIEN SPECIES AND BIOSAFETY STANDARDS**	**To protect natural ecosystems and human health from the planned introduction and/or accidental release of invasive alien species and genetically modified organisms (GMOs).**
3-10	**ENVIRONMENTAL MONITORING AND (EIA)**	**To activate environmental monitoring and impact assessments (EIA) to make sure that the conditions for the conservation of biodiversity and its sustainable use are being taken into consideration in all development projects.**
3-11	**MULTILATERAL ENVIRONMENTAL AGREEMENTS**	**To study, compare, and promote synergy among the various multilateral environmental agreements (MEAs) and regional environmental agreements ratified by Qatar**

3-1 PROTECTED AREAS

To expand the national system of terrestrial and marine protected areas to protect representative examples of all of the major ecosystems, key biological sites and species of special management concern in Qatar

Current Status

Because Qatar is surrounded on three sides by the waters of the Arabian Gulf the marine environment is historically important and constitutes a cultural symbol and a natural source of food, water and wealth for the people. It is this natural heritage that Qatar wants to conserve through a national system of protected areas that encompasses mangroves, salt marshes (sabkha), seagrass beds, sand dunes, rock desert (Hammada), shallow valleys (wadis) and depressions that collect fine sand.

The flora and fauna of Qatar are unique and well adapted to the hot and arid environment. In fact Qatar was the first country in the Arab region to breed the Arabian oryx in captivity. What started as a private hobby by one person was adopted by the State. Captive breeding is now a large and well run activity operating out of wildlife parks such as Shahaniya Wildlife Park and Ras Osheirij and Al Mas-habiyya. These three areas have bred thousands of gazelle and hundreds of oryx.

The "Strategy for Protection of Terrestrial Environment in Qatar (2002) outlines the goals and policies of protected areas

Goals:

1- Conserve terrestrial, coastal and marine wildlife in Qatar.
2- Restore degraded populations of wildlife and their habitats.
3- Increase protected areas in Qatar to 17% of the total land area by 2010.
4- Establish an administrative structure to conserve and develop wildlife resources.

Policies:

1- Land-use planning that allocates more protected areas for specific uses.
2- Establish more protected areas under IUCN Category II (National Parks), Category IV (Ecosystem Conservation), and Category V (Scenic Areas).
3- Activate the conservation role of Qatari citizens through awareness campaigns.
4- Enact a series of laws to control hunting, animal pens, grazing etc.
5- Hire and train a dedicated national team to manage the protected areas and enforce the laws pertaining to them.
6- Activate the role of government and non-government organizations in the conservation of the terrestrial, coastal and marine environment.

Criteria for Selection of Protected Areas

- Coverage of representative ecosystems (as well as of physiographic regions particularly of marine and coastal sites)
- Conservation of key biological sites (including wetlands, marine islands, seagrass beds, mangroves and coral reefs)
- Protection of existing key wildlife species
- Recognition of traditional and local conservation initiatives
- Value for rural development by providing economic benefits
- Value for environmental education and awareness
- An equitable geopolitical spread of protected areas in the country

Reintroductions

Reintroductions are one of the pillars of the SCENR's protected areas policy whereby captive bred animals, particularly Arabian oryx and Reem gazelle, are distributed to landowners who will take care of them under the guidance of the SCENR. Actual sale of some of the gazelle to Qatari citizens has already proved to be an effective method of controlling their numbers in captivity as well as sharing out the responsibility of caring for wildlife with the people of Qatar.

A number of reintroductions have taken place on publicly owned land where the release of wildlife needs to be coupled with extensive public information and surveillance to control any illegal hunting that may occur.

Management Plans for Protected Areas

None of the terrestrial or marine protected areas in Qatar have professional management plans to guide them. It is strongly recommended that formal management plans be developed and implemented to preserve the habitat that remains (e.g. mangrove areas and off-shore islands) and rehabilitate lands that show potential of being suitable habitat for wildlife.

The Training Center for Conservation of Natural Resources at NCWCD in Saudi Arabia

The Training Center was established in 1998 to fill the need for capacity building and formal training of staff in the diverse fields of protected area management. It is located in Riyadh at the headquarters of NCWCD. The interest and positive response from the Arab region to this facility has encouraged NCWCD to transform it into a Regional Training Center. Qatar should take advantage of the large number of programs offered each year as well as programs based on special needs.

Protected Areas in Qatar

NAME	DESCRIPTION
Shahaniya Wildlife Park and Rest Area	This area was one of the first to be established in Qatar for the captive breeding of Arabian oryx and gazelles and is located 40 km from Doha in the center of Qatar. It covers an are of 1 sq. km and has been developed as a tourist destination with a modern Visitor Center and administrative and veterinary facilities. It allows a close up view of wildlife.
Ras Osheirij Protected Area	This protected area is located in the north-western part of the country and is 110 km from Doha. It was established in 1991 and covers an area of 8 sq. km. and it serves to breed Arabian oryx and Reem gazelle.
Al Mas-habiyya Protected Area	This protected area is located in the south-western part of Qatar at a distance of 120 km from Doha. It was established in 1997 and covers an area of 8 sq. km. The purpose of Al Mas-habiyya is to breed Arabian oryx and Reem gazelle. The number of newborn animals increased from 34 in 1998/1999 to 85 in 2000/2001.
Khor Al-Odaid Protected Area	Commonly referred to as the Inland Sea it is located in Qatar's most southerly point and is the natural habitat of a large number of mammals, birds and reptiles that include gerbils, hedgehogs, snakes, foxes, iguanas, ospreys and scorpions. Khor Al-Odaid is a favorite destination for camping and picnicking in the cooler months and was declared a water sanctuary by Ministerial Decree No.78 of the Ministry of Municipal Affairs and Agriculture in 1993 whereby all commercial fishing is banned. A UNESCO study found that the Al-Odaid wetland complexes have the potential to be enrolled in the Biosphere Reserve Programme (Aspinall et. al., 2002).
Ras Laffan Industrial City	Ras Laffan is composed of many micro-geologic profiles ranging from sand dunes to rocky mounds, salt marshes to swamps, and plains to valleys creating ideal habitats for a variety of wildlife such as birds, mammals, lizards, snakes, insects, scorpions and wild flora and their habitats. Ras Laffan is home to many endangered flora and fauna. Mangrove swamps play a very important role in stabilizing coastal areas, controlling seawater intrusion, producing nutrients and creating breeding grounds for a variety of fish and shellfish species which serve as feed for seashore birds.
Al-Safiliya Island Marine Protected Area	The island is about 1.1 sq. km in area and located 8 km north east of Doha. It is looked upon as an important tourist site for the future because it contains some of the best corals and marine life in Qatar.

Proposed Biosphere Reserves in Qatar

The 2002 UNESCO study found that a high proportion of the existing indigenous biodiversity of Qatar is encompassed within two proposed biosphere areas. An almost complete representation of the biotopes present in Qatar (arid stony desert, sand-sheet, rocky outcrops, inter-tidal flats, pelagic and benthic communities, mangrove, salt marshes, seagrass beds, littoral fringe and sabkha) can be found in these two areas.

NAME	DESCRIPTION
The North Western Protected Area	A triangular area in the north –west of Qatar (Al-Zubbar – Dhukan – Rawdat Al-Faras) with an estimated land coverage of 1750 sq. km. and adjacent coastal/marine areas. The 2002 UNESCO study found that this proposed northwestern Qatar protected area has the potential to be enrolled in the Biosphere Reserve Programme.
Al-Thakhira Marine Protected Area	An area on the east coast with an estimated land coverage of 75-100 sq. km. and a much larger adjacent coastal/marine area with a total area of about 300-500 sq. km. This area is at a distance of 64 km form Doha and its wetland complexes contain the largest area of mangrove in Qatar and represent an area of national environmental significance. The 2002 UNESCO study found that the Al Dhakirah mangrove wetland complexes have the potential to be enrolled in the Biosphere Reserve Programme.

Action Plan

Short Term Activities

1- Identify Viable Populations of Flora and Fauna
A concerted effort should be made to identify any remaining viable populations of rare and endemic flora and fauna, both terrestrial and marine species, so that the protected areas system plan can be developed to protect these species where possible.

2- Develop a Protected Area System Plan
Develop a Protected Area System Plan that identifies the array of suitable sites for protection. This will require a regularly updated field survey program to evaluate the sites of greatest urgency and to examine biotopes not yet represented. It will also require the expansion of the current protected area classification system to allow for a broader array of protected area types in line with the IUCN categories.

3- Select New Protected Areas
Develop a procedure for setting priorities in the selection of new protected areas by objectively assessing the:
1-merits of the proposed sites according to accepted selection criteria
2-degree of support of local communities in and around the protected area
3-presence or absence of conflicting land uses
4-urgency of threat to the site and its wildlife population

4- Prepare Management Plans

Management Plans and work programs should be prepared and approved for all the old and new protected areas, and should include the following:

1- location of the area and its legal boundaries
2- management objectives, policies and actions
3- direct and indirect beneficiaries of its resources
4- facilities needed for its proper management
5- budget required to run the protected area
6- monitoring program needed by the management of the protected area.

5- Recruit Staff to Manage New Protected Areas

Staff should be recruited to manage newly established protected areas. The permanent staff should include an experienced manager and trained rangers (number depending on the area) as well as part-time staff.

6- Strengthen Community Participation

Community participation in protected area management should be encouraged through collaborative management arrangements which formally involve both government and stakeholders. Community conserved areas (CCAs) should also be promoted.

7- Strengthen Traditional / Local Conservation Initiatives

Traditional and local conservation initiatives should be strengthened and where appropriate incorporated into protected area management plans. In this regard, the traditional hima and rainwater harvesting systems should be surveyed and studied.

Long Term Activities

8- Implement Hunting Ban in Protected Areas

Review laws and legislation pertaining to hunting, and make sure these laws are implemented - particularly those connected with hunting in or around protected areas.

9- Continue Protection and Reintroduction of Key Terrestrial Species

The reintroduction of key species such as the Arabian oryx and Reem gazelle should continue inside and outside protected areas particularly in private farms where they are well looked after.

10- Investigate Protection and Reintroduction of Key Marine Species

The protection and reintroduction of key marine species such as sea turtles and corals not only improves the productivity of the marine ecosystem but also to attract tourists and divers from around the world.

11- Promote Cooperation

There is a need to promote more cooperation between all Qatari Government Ministries, particularly the MMAA, Tourism and SCENR.

12- Public Awareness Programs

In addition to printed materials such as books, booklets, brochures and maps of protected areas, an effort must be made to physically bring people and protected areas together.

Monitoring Indicators

1- Number of officially recognized (terrestrial, marine and coastal) protected areas and their distribution.

2- The area occupied by protected areas as a percentage of Qatar's total land and marine area.

3- What percentage of Qatar's major ecosystems are adequately represented in the protected area system.

2- Budget and number of trained and qualified staff to manage each area.

3- Number and health of flora and fauna populations in each area.

4- Number of visitors to each of the protected areas

5- Number of facilities available for visitors at each protected area.

6- Awareness of visitors regarding importance of conservation.

Responsible Institutions

1- The establishment and long term management of protected areas in Qatar is the responsibility of the Supreme Council for the Environment and Nature Reserves (SCENR).

2- The SCENR is responsible for:
a) approving the selection of sites to be protected,
b) preparing a management plan for each area and
c) organizing staff management training programs.

3-2 ECOTOURISM SITES AND FACILITIES

To develop sustainable nature based tourism in the natural and scenic areas of Qatar

Current Status

Nature based tourism is a broad description of all tourist activities that depend on the consumptive and non-consumptive uses of a natural resource such as mountains, valleys, seashore, ocean, etc. From this developed the concept of "ecological tourism" or "ecotourism" in the early 1980s. It is defined by the Ecotourism Society as "responsible travel to natural areas that conserves the environment and sustains the well-being of local people".

Local Tourism

Some natural areas and scenic sites in Qatar are very popular among both nationals and outsiders for picnics and camping and there is an urgent need to conserve and manage those sites to avoid the destruction of their natural assets. It is important for the biodiversity strategy to stress the need for developing and managing local nature based tourism for Qatari citizens and visitors wishing to enjoy the beauty of the country.

Ecotourism can make substantial contributions to regional development by attracting both local and foreign tourists to rural areas. It is considered one of the best ways of bringing economic benefits to those remote areas by providing local employment, activating local markets and stimulating the improvement of transportation and roads.

However negative impacts on the environment such as degradation of the landscape, destruction of the native flora and fauna and pollution of water resources must be minimized or totally avoided.

Foreign Tourism

Despite the large influx of workers and businessmen to Qatar each year, foreign tourism to natural or cultural sites is very low except for the members of the resident foreign community in Qatar.

Visitor Centers

The importance of having a visitor center in a protected area has been discussed earlier. However, it is important to note that visitor centers may be located in towns or villages near the protected area where they can benefit the local economy more than if they were in the protected area.

Factors in Selecting Ecotourism Sites

The value of a site for rural development through ecotourism is related to the following factors which have a cultural/aesthetic significance to people in Qatar:

1- the presence of flagship species of plants such as the date palm and mangroves.
2- the presence of flagship species of animals such as Arabian oryx, gazelles, dolphins, houbara, ostrich, cranes and sea turtles.
3- the presence of water features such as fresh water springs and inland seas.

4- the presence of vegetation in good condition, especially where it is abundant and provides shade, greenery and seasonal flowers.
5- the presence of outstanding sand dunes
6- the presence of outstanding coral reefs.

Developing the Ecotourism Sector

The Ministry of Tourism and SCENR will pay particular attention to:

1- Appraisal of tourism development projects on publicly owned lands in natural areas like beaches, islands, sand dunes and others.
2- Survey and demarcation of natural areas and determination of limits to their development.
3- Investigate the status of archeological sites and architectural heritage and their potential for restoration.
4- Study the infrastructure needs of tourism projects and set standards for their implementation.
5- Prepare an atmosphere that is conducive to investment in eco-tourism by the private sector.
6- Pay particular attention to the positive and negative impacts of tourism on natural resources.

Example of a Natural Site Without Facilities: Khor Al-Odaid

Commonly referred to as the Inland Sea it is located in Qatar's most southerly point. It is a favorite destination for camping and picnicking in the cooler months. It is the natural habitat of a large number of mammals, birds and reptiles that include gerbils, hedgehogs, snakes, foxes, iguanas, ospreys and scorpions.

Khor Al-Odaid is now under serious threat from its overuse by visitors, refuse and vehicle impact on the terrain. Once it is properly managed it will serve to educate people on the need to conserve the area and its wildlife, allow certain recreational activities to continue, offer guided scenic tours, bird watching facilities, and opportunities for observation and learning.

Khor Al-Odaid will encourage academic institutions and private organizations to play a part in its development giving them first class opportunities to study a natural marine and terrestrial ecosystem. It could also bring international recognition to Qatar by combining environmental awareness, sustainable development, growth of ecotourism and could serve as a model for future projects in the country.

Action Plan

Short Term Activities

1- Determine Willingness of Communities
Determine which communities in Qatar are willing to accept the changes that ecotourism development introduces to their rural areas such as the establishment of tourist facilities and training villagers to become ecotourism operators.

2- Select Suitable Areas and Upgrade Infrastructure
Determine which protected areas are suitable for ecotourism and upgrade the infrastructure in those communities such as roads, hotels, restaurants. Environmental Impact Assessments need to be conducted development projects, particularly those involving coastline modifications.

3- Prepare Basic Facilities and Build Tourist Accommodations
Prepare the basic facilities that tourists require when they visit a protected area such as parking, shade, rest areas, visitor's centers and build modest tourist facilities such as hotels, motels, eco-lodges and camps according to the standards set by the SCENR.

4- Establish Visitor Centers
Visitor Centers should be built and equipped in or near protected areas. It is preferable to locate such centers outside the actual protected area when possible to protect the environment, reach more people and directly stimulate the local economy.

5- Train Tour Operators and Guides
Build the capacity of tour operators, guides and outfitters by providing them with professional training both in and outside of Qatar.

6- Hire Local Residents
Hire local residents as managers/guides/guards in the protected areas and offer on-the-job training courses to local staff and tour operators to maximize benefits and minimize harmful practices.

7- Implement Visitor Policy
All protected areas receiving tourists must have a planned visitor policy that is strictly applied and regularly upgraded.

Long Term Activities

8- Revenue Sharing with Local Communities
Provide credit facilities to local enterprises working in ecotourism and encourage purchase of more goods and services from local shops in an effort to help the local communities increase their share of revenues.

9- Encourage Private Sector Financing
Sources of funding from the private sector should be thoroughly explored and used creatively to finance conservation projects in protected areas (such as a diving submarine to explore marine life and coral reefs).

Monitoring Indicators

1- Number and impact of people visiting an area for tourism.

2- Amount of money raised from visitor's fees.

3- Level of monetary benefits to local businesses from visitors.

4- Record of the nationalities of foreign visitors and the sites they visit.

5- Number of trained guides working in the field of ecotourism.

6- Level of credit facilities available for local businesses to develop and expand.

7- Level of private sector investment and financing available to ecotourism.

Responsible Institutions

1- The Qatar Tourism Authority, in collaboration with the private sector, will need to set the standards for developing national and international tourism in Qatar, support the training of guides and extend credit facilities to ecotourism operators in Qatar.

2- The SCENR will develop visitor policies for sites situated in protected areas and requiring the presence of trained guides.

3- The MMAA is responsible for issuing permits to residential, commercial and urban developments, however the SCENR needs to approve such permits.

3-3 MARINE AND COASTAL RESOURCES

To protect and conserve living marine and coastal resources for the development of a sustainable marine fishing and recreation industry in Qatar

Current Status

Fish

In the past, pearling was a major component of Qatar's fishery, but this has changed in focus to fish for local consumption. The total local catch of fish has increased from 4271.3 tonnes in 1995 to 7139.6 tonnes in 2000 for an increase of approximately 67% since 1995 (Qatar, 2000). However the total catch of some species declined, for example Needle Fish and Parrot Fish which dropped by 95% and 86% respectively, over the same time period (Qatar, 2000).

More information is needed on Qatar's fisheries. Information on marine and coastal diversity of Qatar is twenty years old and needs to be updated (Abushama 2002). The result of coastal surveys could be used to safeguard critical coastal habitat and, with other actions, the future of the Qatari fishery.

Coral reefs and seagrass beds

Coral reefs and seagrass beds provide important habitat to some of Qatar's most important commercial fish species, yet there is very little current information on them. Surveys should be carried out to determine impacts on coral reefs and seagrass beds of commercial and recreational fishing, and industrial development and shipping.

Seagrasses are a vital resource for many species present in Qatari coastal waters, several of which are on the IUCN Redlist (i.e. dugong and green sea turtle). They are also a major food source, refuge and nursery for most of the recreationally and commercially important seafood including finfish, shrimp, pearl oysters and scallops (Aspinnal et. al., 2002).

Coral reefs which are present along the east and north coasts represent the most biologically diverse ecological community type in Qatar, however, there is little information on them. Three out of Qatar's four most caught fish, are dependent at one or more life stages on coral reefs and/or seagrass beds.

Marine Animals

The harvest of shellfish, seabird eggs, and other animal products has been practiced for a long time. This practice has now become a problem in Qatar because of the increased scale of the harvest. It is now forbidden to harvest marine turtle eggs because of the endangered status of the species, however, it may be possible to permit one harvest of seabird eggs on certain islands without disrupting breeding by restricting it to early part of the breeding season.

Habitat Loss

The loss of habitat through actions such as ocean infilling, dredging and sedimentation is probably the number one threat to marine and coastal endangered species around the world. The Al Khor and Al Dhakirah mangrove wetlands face several land-use issues such as encroachment by villas, sewage effluent, rubbish disposal and land reclamation (Aspinall et. al., 2002).

Coastal Atlas of Qatar

The coastal ecosystems of Qatar and the neighboring Gulf countries are among the most interesting in the arid regions of the world. They provide the resources for fisheries and recreation. These coastal ecosystems are fragile and threatened by human activities such as urban development on the coast, pollution, oil and gas mining and uncontrolled recreation.

The proposed Coastal Atlas will determine where special animal/plant communities occur, their interrelationships with adjacent ecosystems and the impact of the activities of humans on the coastal and marine life - to allow for the formulation of a coastal development plan in Qatar.

Qatar Marine Environment Monitoring Program (QMEMP)

The SCENR recognized the danger posed to the living resources of the marine environment and to human health by pollution from land-based sources due to the release of insufficiently treated domestic and industrial discharge, offshore operations and shipping. To understand and deal with this serious problem the QMEMP was prepared by the Marine Monitoring Unit (MMU), Environmental Monitoring Section (EMS) and Technical Affairs Dept (TAD) of SCENR and is now being implemented.

Action Plan

Short Term Activities

1- Actively Promote Cooperation for Marine Conservation

Actively promote cooperation between Government Ministries, Agencies and community organizations in developing marine management policies to guarantee the continued existence of marine and coastal flora and fauna.

2- Limit Landfilling and Dredging Activities

Limits to landfilling and dredging activities will yield positive results for the marine and coastal environments of the Arabian Gulf.

3- Apply Laws and Decrees that Regulate Fishing in Marine Waters

Apply the many laws and decrees that protect aquatic species and promote sustainable use such as the restrictions on the number of licensed fishing boats; the introduction of regulations on the mesh size of nets; the introduction of closed seasons; etc.

4- Discourage Intensive Fishing Activities

Intensive fishing activities have caused a decline of shrimp and hamour stocks, and trawling causes damage to seagrass beds and to shrimp, dugong and sea turtles.
There is an urgent need to reduce by-catch and the accidental deaths of species of special management concerns such as sea turtles, dolphins, dugongs, and sea birds.

5- Reduce Grazing of Mangroves and Coastal Vegetation

Grazing of mangroves and coastal vegetation by camels and other livestock is causing serious damage.

Long Term Activities

6- Develop an Integrated Coastal Zone Plan

The development and implementation of an integrated coastal zone management plan that includes a comprehensive marine zoning system is essential for the long term conservation of marine and coastal resourses.

7- Establish Research and Monitoring Stations
Establish research and monitoring stations along the Qatari coast to study and measure indicators relating to marine and coastal conservation and fishing practices. The algae populations are claimed to number 5000 species, however more study and verification of these numbers is recommended.

8- Control Pollution and Treat All Wastes
Minimize the use of agricultural pesticides and chemical fertilizers, control pollution and treat all wastes to make sure they are safe before they are dumped.

9- Encourage Model Development Projects and Activities
Acknowledge and encourage those development projects and activities that conserve and enhance the natural resources of the coast, thereby increasing the value of residences, tourism and recreation.

Monitoring Indicators

1- Number of endangered species of marine and coastal flora and fauna.
2- Number of marine species and their increase/decrease per unit area.
3- Size and composition of the fisheries catches.
4- Number of incidental deaths of species of special management concern.
5- Level of chemical and biological pollutants.
6- Level of litter and tar balls on the shore.
7- Level of coastal shore erosion.
8- Number of marine research institutions, the qualifications of their staff and the quality and quantity of their publications.

Responsible Institutions

The MMAA / Fisheries Sector is responsible for marine fisheries and ecosystems and aquaculture farms.

The SCENR is responsible for monitoring marine and coastal environments and for establishing more marine protected areas.

3-4 DESERT RANGELANDS AND DESERTIFICATION

To combat desertification by improving the management of desert rangelands

Current Status

Approximately 18 % of the land surface of the State of Qatar is covered by sand dunes or sand, and desertification is an issue.

Desertification is enhanced by:
1- Uncontrolled grazing by sheep, goats and camels.
2- Excessive harvest of woody shrubs for firewood.
3- Conversion of the best productive rangelands to agricultural land.
4- Extended periods of drought.
5- Damage from off road driving.

The government has taken several measures to combat desertification including :
1- creating an inventory/map of Qatar showing deteriorated lands;
2- monitoring the increase in desert through desert creep or salinity from the decline in the quality of irrigation water;
3- reduction in the number of illegal camps which operate in rural areas;
4- enhancing recharge, and undertaking vegetation restoration programs;
5- enacting grazing laws to prevent desertification of rangelands – but there appears to be little enforcement of these laws to restrict grazing.

Desert Rangelands

The average annual precipitation is less than 100 mm and the vegetation is composed of arid land grasses and shrubs.

Nomadic pastoralism developed over centuries as a rational response to the erratic rainfall of the arid lands and the consequent fugitive nature of the plant resources. It is the most widespread form of land use in Qatar. Even though yields were usually low, traditional pastoralism allowed people to maintain themselves from their herds for many centuries. The availability of forage plants regulated livestock numbers that regulated human numbers. This served to maintain a dynamic equilibrium that was able to counter any serious environmental degradation.

However, the introduction of water tankers, stock trucks, widespread boreholes, supplementary feeds and veterinary services has changed the nature of pastoralism in all of the Arabian peninsula. The numbers of livestock have increased far beyond the carrying capacity of their desert rangelands because they are no longer subject to starvation in times of drought, less dependent on following the rains and remain stationary for much longer periods. This causes severe overgrazing of the rangelands. Thus the pastoralism that is currently practiced in all of Arabia is unsustainable and the rangeland ecosystems are being stressed beyond their ability to recover.

According to the 1998 Agricultural Survey there were 206,266 sheep, 175,046 goats, 13,989 cows, 50,077 camels, 3195 horses, and 6219 gazelles in Qatar. To feed this number of livestock requires about 92,042 tons of dry forage of which only 50, 247 is produced locally while the rest is imported.

Animal Pens (Isba)

Annual Report, SCENR, 2001

The widespread building of animal pens in rangeland areas has caused a marked deterioration of the terrestrial environment. This is most evident in the reduction of plant cover and drifting soil as well as the increase in paper, garbage and other building materials and residues in the areas surrounding those country retreats.

In 2002 the number of these country retreats totaled 1764. They are mainly found in the municipalities of Rayyan (52%), Umm Salal 26%), Al Khor and Al Thakheera (14%). In order to protect the terrestrial environment from further deterioration a project for the organization of country estates is being implemented in Qatar. The unlicensed and abandoned country estates have been removed and a new system of licensing based on a functional and visually pleasing plan has been developed.

Several wild species of plants are harvested for traditional use or used as fodder for camels, goats and sheep. The traditional use of biodiversity should only be encouraged if it is compatible with the aims of conservation and sustainable development. Plant populations under heavy commercial and traditional use need to be surveyed, risks evaluated and an appropriate management plan developed otherwise they will disappear from Qatar.

Truffles

Truffles belong to the trefezia family and they grow just below the ground at depths of 2-10 cm. They grow after winter rains and are found in sandy soil among plant growth where they feed on nutrients from the roots of various plants such as Helinthenum lippii. Truffles vary in color from white to light brown and have a characteristic light fragrance. In Ras Laffan three types are found: the Zubaidi, Khalas and Houbry. Truffles are regarded as a delicacy throughout the Arab region and the collection of truffles in Qatar is traditionally a family event.

All the above factors have contributed to the deterioration of the desert rangelands thereby causing further desertification. The result has been the replacement of palatable shrubs and grasses with undesirable thorny plants that are of no nutritional value to livestock. The palatable shrubs and grasses have become rare and some are threatened with extinction.

The most obvious loss to the biodiversity of the desert rangelands is to be seen in the disappearance of the larger mammals. This region was for hundreds of years a rich wildlife area with its gazelles, oryx, wolves, and other mammals. Some of those wild animals persisted until the early 1950s, at which time uncontrolled mechanized hunting and overgrazing by domestic livestock eliminated most of them.

Hima Systems

The teachings of Islam affirm the need to conserve different areas of land for the benefit of everyone. These areas are collectively called "hima" which can mean either "protected area" or "reserve". Himas are the earliest known record of range management as a social institution and this practice of holding land in a reserved status antedates Islam. It was later adopted by Islam and sanctioned by Shariah law.

Himas play an important role in combating desertification by providing rehabilitation of rangelands, stabilization and control of nomadic grazing, better animal husbandry practices, proper management of water catchment areas, protection of biological diversity, and also serving as areas for ecological and socio-economic research.

Action Plan

Short Term Activities

1- Determine Carrying Capacity
Determine the carrying capacity of the different desert rangelands taking into consideration the rainfall factor and season of growth to help the government regulate grazing and ensure a balanced utilization of ranges.

2- Implement Controlled Grazing Schedules
Implement controlled grazing schedules that promote rangeland rehabilitation by combining them with the distribution of feed and veterinary services.

3- Promote Livestock Feeding
Promote more livestock feeding stations that keep livestock away from the rangelands for most of the year provided they are integrated into an overall system of rangeland conservation and management. If the feeding stations are not integrated then they might exacerbate the problems of overgrazing.

4- Change in Subsidy Policies
There is a need for less and not more livestock on the desert rangelands. This calls for a change in the type and quantity of government subsidies offered to pastoralists to encourage them to keep smaller numbers of livestock.

5- Improve Livestock Marketing
Marketing is a key mechanism for reducing livestock numbers by offering livestock owners with a ready and reliable outlet to sell their animals.

Long Term Activities

5- Replicate Lessons of the Himas
Historically himas served as an example of the "best managed" rangelands in the country and those lessons need to be replicated (see box on Hima Systems).

6- Save Ground Water Reserves
Save the ground water reserves in the desert rangelands for emergency situations only. This is best accomplished by not subsidizing large agricultural and irrigation projects in rangeland areas.

7- Expand Conservation and Planting of Local Forage Plants
Whereas greater attention should be paid to the restoration and rehabilitation of degraded rangelands, such as removing the grazing pressure, there remains a need in many areas for planting local forage plants such as *Panicum spp* and *Cenchrus spp* in the desert rangelands. Once replanting is accomplished it is important to allow time for the recovery of the vegetative cover.

8- Institute a Monitoring Program
There is a need to institute a comprehensive rangeland monitoring program to assess the numbers and distribution of livestock and wildlife; the extent and severity of land degradation; vegetative cover quality. It would be highly advisable to develop an "early warning system" to detect the onset of degradation so that livestock can be removed from the rangelands before severe damage is done.

Monitoring Indicators

1- Level of natural vegetative cover throughout the desert rangelands, particularly in the degraded and desertified areas.

2- Numbers of palatable species for domestic livestock and hence the productivity level of these natural rangelands.

3- Increase or decrease in the areas of protected rangelands.

4- Level of cooperation from livestock herders and herd owners in the conservation of the desert rangelands.

Responsible Institutions

1- The Ministry of Municipal Affairs and Agriculture (MMAA) is the principle institution responsible for all aspects of rangeland management.

2- The SCENR is the principal institution responsible for all aspects of wildlife management and reintroduction programs.

3-5 AGRO-BIODIVERSITY AND DESERTIFICATION

To combat desertification by conserving agro-biodiversity and promoting sustainable development in rural areas

Current Status

It is important to remember that all the plants and animals used in modern agricultural crop production originally came from the wild. The domestic varieties of plants and breeds of animals we use today have been heavily selected for certain characters and are in need of genetic material from wild relatives to maintain and improve their production levels.

Unfortunately, the local landrace varieties and wild relatives of many of our commercial crops are faced with imminent disappearance because of imported varieties and absence of conservation measures for their protection. Some of the local breeds of cattle, sheep, goats, camels, horses and salukis are disappearing throughout Qatar and the Arabian peninsula.

The loss of the genetic material of local domestic plants and animals is not the only concern in the efforts to save agricultural biodiversity. The need to adopt more sustainable agricultural production methods based on local and traditional practices is essential. It has become very clear that many of the modern agricultural and water use practices of the past few decades have had detrimental effects on the long term productivity of land and water resources in Qatar.

Agriculture in Qatar was once free of serious insect pests, diseases or pathogens because many of the local plants and animals were well adapted and co-existed with their pathogens. However since the practice of importing high yield varieties began many insects, weeds, fungi, nematodes and viruses were also introduced with the imported plant materials (see 3-9 Invasive Alien Species).

Threats to Domestic Agriculture

1- Intensive use of agricultural pesticides, particularly herbicides, and chemical fertilizers.
2- Conversion of agricultural and grazing land to residential areas.
3- Genetic erosion through the replacement of wild and native species of plants and animals with exotic and “improved” species or varieties.
4- Reduction of palatable plants as a result of changes in traditional land-use and excessive grazing.
5- Desertification which has had a negative effect on vast areas of rainfed and irrigated agricultural land.

Gene Banks

There is an urgent need to safeguard Qatar’s plant and animal genetic resources. One of the best ways to do that is to establish gene banks that include seed banks, field banks and sperm and ova banks. Qatar needs to properly staff and fund its gene banks.

Water Efficient Agricultural Practices

Agricultural development has been accomplished largely through the excessive use of non-renewable "fossil" water. Groundwater withdrawals total approximately 244 million cubic meters per year whereas groundwater recharge, through precipitation infiltration is on the order of 54 million cubic meters per year.

It has been reported that groundwater levels are declining annually and that groundwater quality is deteriorating as a result of salt-water intrusion/upwelling. It is recommended that groundwater withdrawals be reduced to a level which is comparable to the natural rate of recharge.

Water efficient agricultural practices are absolutely necessary to halt the excessive use of non-renewable water resources. Water saving practices include the introduction of more modern techniques such as greenhouses, drip irrigation and rainwater harvesting.

A monitoring program should be established to determine the quantity of water pumped from each well and to monitor quality. There are many potential sources of contamination which could adversely affect surface water and shallow groundwater, including soak pits at industrial facilities, landfills with unlined surfaces, sewage spreading in the desert, and fertilizer/pesticide use. In addition the injection of waste oil production fluids into deep geologic formations, while a common practice, has the potential to contaminate shallower water supply aquifers.

Promoting Sustainable Development in Rural Areas

Sustainable development and eradication of rural poverty are essential components of any strategy to combat desertification and protect biodiversity. The elements in the following table are contained in Qatar's Agenda 21 and are applicable to combating desertification and conserving agro-biodiversity.

Qatar's Agenda 21

1- Lands that are not degraded or only slightly degraded must be put under surveillance to make sure no future degradation takes place.

2- Strengthening institutions and promoting policies that encourage and facilitate access to information and new technologies.

3- Improving climatic studies and weather forecasting.

4- Preparing plans for drought areas.

5- Warehousing and marketing facilities for food distribution in rural areas.

Action Plan

Short Term Activities

1- Restrict Residential Areas
Restrict conversion of agricultural and grazing land to residential areas and rehabilitate and replant marginal and desertified land using local plants.

2- Avoid Agricultural Pesticides
Avoid the intensive use of agricultural pesticides, particularly herbicides, and chemical fertilizers and introduce integrated pest management (IPM) for all irrigated crops.

3- Amend Laws and Legislation
Review all laws and legislation with a view to suggesting amendments that comply with the requirements of sustainable agricultural production.

4- Establish Gene Banks
Establish and upgrade seed collections and seed banks of local wild varieties, cultivated land races of plants, sperm and ova of local domestic animals and important micro-organisms.

Long Term Activities

5- Protect Local Varieties and Limit Importation of Exotics
Implement laws that protect local varieties of cultivated crops and trees and limit the importation of exotic species that compete with local varieties (see 3-9 Invasive Alien Species).

6- Support Farmers with Local Breeds
Encourage and support farmers raising local breeds of domestic animals and support government and private livestock breeding stations specializing in local breeds of horses, camels, sheep, and goats. Establish artificial insemination and embryo transfer centers to promote local breeds.

7- Develop Agricultural Incentives
Develop a system of agricultural incentives that promote the conservation of local agricultural biodiversity and support the cultivation of local varieties by farmers in their fields.

8- Improve Irrigation Practices
Improve irrigation practices that reduce the amount of water used (such as drip irrigation), prevent wastage of this resource, and promote the use of treated sewage water as well as rainwater harvesting techniques.

9- Upgrade Agricultural Extension
Upgrade agricultural extension services to enlighten farmers about the advantages of conservation of agricultural biodiversity.

Monitoring Indicators

1- Implementation of effective regulations pertaining to the import and safe use of chemical fertilizers and agricultural pesticides.

2- Adoption of Integrated Pest Management (IPM).

3- Application of water efficient agricultural systems such as drip irrigation, water harvesting, etc.

4- Number of farmers growing local varieties of food crops.

5- Number of rural institutions that have access to information and new technologies.

Responsible Institutions

1- The MMAA is the principal institution responsible for all aspects of agricultural production in Qatar. The future of agricultural biodiversity rests with the MMAA that needs to regularly review and evaluate its agricultural policies and practices.

3-6 ENVIRONMENTAL LEGISLATION

To enforce environmental legislation that conserves and sustainably uses biodiversity in Qatar

Current Status

Environmental Legislation

For any National Biodiversity Strategy to be properly implemented it needs to have all its components supported by a comprehensive and unified body of environmental legislation. This body of environmental legislation need to be regularly updated and strengthened. It is also necessary to overcome any administrative or legal obstacles that have been found to be a hindrance to new environmental legislation.

The SCENR has already taken the initiative to prepare a number of environmental regulations that incorporate the following needs in their formulation:
1- To fill the regulatory gaps in the field of the environment
2- To update existing regulations in line with recent scientific, technical and administrative developments
3- To confirm the commitment of the State of Qatar to regional and international environmental conventions
4- To grant the SCENR executive powers through the exercise of deterrent penalties.

In addition to the legislative gaps that have already been identified, consideration should also be given to the need for new legislation in other areas such as importation of alien species and biosafety; access to genetic resources; benefit sharing; and collaborative management of protected areas.

Legislation of Importance to the Conservation of Wildlife

Law for the Protection of the Environment	In draft form the law is comprehensive with sections regulating environmental impact assessment, emergency plans, public awareness campaigns, land pollution, hazardous substances and wastes, air pollution, and water pollution including groundwater, surface water and marine water. In addition, the law provides inspectors with police powers to investigate compliance. Punishments are stipulated for violations.
Draft Law on International Trading in all Kinds of Endangered Species and their Products State of Qatar	This law is intended to control international trading in endangered plants or animals or any product originating from them. The law is based on the Convention on International Trade in Endangered Species of Flora and Fauna. The law requires cooperation with other governments regarding the execution of the convention, the issuing of permits for import, export and re-export, and punishment of action that is not allowed under the law.

Draft Law Regarding the Control of Substances Consuming the Ozone Layer	This law controls Ozone Depleting Substances (ODS) as required under the Vienna Convention and Montreal Protocol. The ODS are defined under the Montreal Protocol and the import, export and re-export of ODS is limited to States party to the Convention and Protocol. The law describes a process to distribute the allowed national ODS consumption limits to meet the targets of the Montreal Protocol.
Draft Law Concerning Environmental Impact Assessment Procedures	This law requires environmental impact assessment to be conducted for government, national development plans and general classification projects. The law requires that environmental impact assessments be submitted to SCENR for approval. Licensing authorities are required to grant licenses only after environmental permission is given by SCENR. The law lists the projects in addition to government projects that are required to undergo an environmental impact assessment.
Law No. 32 (1995) "Regarding Prevention of Damaging Plant Environment and Its Contents"	This law provides protection to the plant environment and gives officials in the Ministry of Municipal Affairs and Agriculture policing authority. This law regulates many activities including grazing, agriculture, setting fires, driving vehicles in plant environment areas, dumping of wastes, and cutting trees and bushes.
Decree Law No. 11 (2000) "Establishing the Supreme Council for the Environment and Natural Reserves (SCENR)"	This law establishes the Supreme Council for the Environment and Natural Reserves and gives the Council a range of powers and responsibilities. The Supreme Council's role is to take all necessary actions to protect the environment, conserve endangered species of wildlife and their natural habitats.
Decree Law No. 24 (2001) is an amendment of the provisions of Law No. 4 (1983) "Regarding the Exploitation and Protection of Living Marine Resources in Qatar"	This amendment of the law deals with the marine environment and requires licenses for several types of activities. These activities include construction and operation of dams, plant exploitation, fishing methods, sea infilling, and any work that may lead to the damage or threatening of living marine resources.
Law No. 4 (2002) "Organization of Wild Animals, Birds and Reptiles Hunting	This law regulates the hunting of wild animals, birds and reptiles. The law prohibits hunting in sanctuaries and islands, and inside cities and villages. Under this law, SCENR can set hunting regulations regarding the species, season, and hunting method. The hunter is encouraged not to interfere with marine turtles, birds and their eggs and nests, and not to harm meadows and wild plants. SCENR is given the powers of investigation and seizure.
Law No. 19 (2003) is an amendment of the provisions of Law No. 4 (1983) "Regarding the Exploitation and Protection of Living Marine Resources in Qatar"	This law clarifies the roles of the staff of the MMAA and SCENR in overseeing and controlling the exploitation and protection of living marine resources.

Action Plan

Short Term Activities

1- Establish Legal Mechanism for Implementation of Strategy

Establish a legal and administrative mechanism for implementation of the Biodiversity Strategy of the State of Qatar.

2- Enforce Legislation to Conserve Wild Flora and Fauna

Enforce legislation pertaining to the conservation and management of wildlife and its habitats and control introduced species of plants/animals (3-9 Invasive Alien Species).

3- Review Existing Legislation

A detailed review of existing legislation against the obligations of the CBD and other multilateral environmental agreements to which Qatar is a signatory to determine the need for amendments and additions.

4- Update Legislation to Prevent Degradation of Agricultural Lands

Update legislation to prevent the degradation of all agricultural lands.

5- Update Legislation to Halt Overuse and Pollution of Water Resources

Update legislation to halt the overuse and prevent pollution and or degradation of critical water resources in Qatar.

6- Survey and Remove Debris from Seabed

Add specific requirement to the Environment Protection Law to survey and remove debris from the seabed.

7- Prohibit the Use of Soak-Pits and Sewage Spreading in the Desert

Prohibit the use of soak-pits for new projects and phase out existing pits as well as spreading sewage in the desert.

Long Term Activities

8- Document Traditional Law

It is important to document customary and traditional law related to biodiversity, such as the laws governing the Hima systems, and to explore ways in which this could be integrated with statutory law.

9- Strengthen Law Enforcement

Develop practical steps to strengthen law enforcement that would include:
a) enhancing the capacity of law enforcement (wildlife officials, police, customs, quarantine officers, etc.)
b) providing training in the identification of protected species (particularly listed by CITES)
c) enhancing awareness of conservation laws and regulations among stakeholder groups
d) providing NGOs and citizen's groups with the legal right and the capacity to act as environmental monitors.

9- Ensure that Companies Have a Chemical Use Plan
As an important part of pollution control all companies need to file a chemical use plan and update it on a regular basis.

10- Update Legislation to Link Human Development with Biodiversity
Update legislation that links human and socio-economic development with the conservation of biodiversity.

11- Update Legislation for Use of Clean Technology
Update legislation to promote the use of environmentally clean technology by adhering to the articles of the various environmental Conventions.

Monitoring Indicators

1- Number and content of laws and legislation pertaining to biodiversity.

2- Level of implementation of laws and legislation pertaining to biodiversity.

Responsible Institutions

1- In cooperation with the SCENR, all Ministries/Councils/Institutions with a concern for biodiversity should submit Draft Decrees for consideration and enactment as laws.

3-7 SCIENTIFIC RESEARCH

To support scientific research and establish data base centers that provide decision makers with accurate facts on the status and trends of biodiversity in Qatar

Current Status

Scientific Research

There are few scientific studies in Qatar determining the threats to both terrestrial and marine flora and fauna. This lack of information seriously limits the ability of management authorities such as SCENR to conserve biodiversity and safeguard the environment. A complete review of species at risk occurring in Qatar is needed. This requires extensive field work to identify populations, habitat, threats and a plan for recovery.

The recently completed Biodiversity Inventory (2004) is a valuable document for conservation but it has several limitations. The inventory is heavily dependent on generalized information that is dated and needs to be verified through field surveys.

Qatar's Biodiversity Database

More information on the biodiversity of Qatar is needed. Although SCENR, SARC, international organizations and others have undertaken surveys of flora and fauna in both the terrestrial, coastal and marine environments, there remain certain gaps in knowledge pertaining to the description of the flora and fauna, status of species and locations of critical habitat.

Based on the need to fill the gaps in knowledge the Biodiversity Database is in its early stages of development and its main aims are:
1- Establish a database that collects, sorts, and records all information relevant to biodiversity and wildlife in Qatar.
2- Disseminate information relevant to biodiversity and wildlife in Qatar through publications, CD's, Species 2000, and the Internet.

GIS System

Qatar has developed a capacity for GIS involving a number of different ministries and departments. Using the Canadian MEIS system the entire coastline has been photographed and all the data stored in digital form. This will allow planners and researchers to have immediate access to a wide spectrum of information related to the coastline and its living and non-living resources. The GIS system will also facilitate the exchange of information that is urgently needed in the fast paced development of Qatar – particularly its coastline.

Action Plan

Short Term Activities

1- Conduct Field Surveys
In collaboration with SARC continue conducting field surveys to update existing information on the state of the remaining terrestrial, coastal, marine and freshwater ecosystems in Qatar and determine the causes for their loss. More funding is needed to focus on the gaps in the available scientific studies and surveys such as:
a) terrestrial and marine invertebrates, marine plankton, macro algae where more research and verification are needed.
b) identification of key biodiversity sites of conservation importance
c) the ecology of threatened species and the impact of invasive alien species (IAS)
d) human/ecosystem interactions and traditional knowledge; conservation practices and agrobiodiversity.
e) the economic costs and benefits associated with conservation (valuation studies).

2- Provide Research Grants
Provide research grants to institutions and individuals that submit research proposals addressing critical biodiversity issues in Qatar.

Long Term Activities

3- Adopt a Coordinated National Biodiversity Research Plan
Adopt a coordinated national biodiversity research plan that brings scientific institutions together to determine research priorities and agree on monitoring indicators for biodiversity.

4- Link Scientific Institutions to Computerized Data Base
Link all the scientific institutions in Qatar to each other and to a central computerized data base for better and faster dissemination of information.

5- Publish Information on Status of Species
Allocate funds for the preparation and publication of 'Atlases' on all the fauna and flora of Qatar particularly those taxon that are endangered or threatened.

6- Orient University Studies Towards Biodiversity
In collaboration with SARC orient university studies in biology, agriculture and environment towards national biodiversity issues.

Monitoring Indicators

1- Level of implementation of a coordinated national biodiversity research plan.
2- Degree of orientation of university studies towards national biodiversity issues.
3- Number of reference libraries and research facilities specializing in biodiversity.

Responsible Institutions

All universities (particularly the University of Qatar), scientific institutions (SARC), government ministries and private sector organizations need to coordinate such research activities with the SCENR.

3-8 EDUCATION AND PUBLIC AWARENESS

To upgrade biodiversity education and public awareness campaigns which reflect the role of biodiversity conservation in the welfare of the citizens of Qatar

Current Status

Environmental Education and Public Awareness

Education is usually restricted to students and to formal curricula, whereas awareness tends to be for people outside the formal educational system. Both formal education and public awareness are important tools in raising the level of knowledge and commitment to biodiversity.

Schools in Qatar teach many subjects that are related to biodiversity such as biology, botany, zoology, and environment. The subject of conservation of biodiversity and the causes of its decline and harmful effects on society are being increasingly covered in the science and social studies curricula of the schools. However most schools lack an outdoor program where students are taken on regular field trips. There is also a lack of school gardens where plants and animals can be seen and studied regularly.

Universities in Qatar need to develop their undergraduate and graduate programs to incorporate national biodiversity issues that include the scientific, cultural, economic and religious aspects of the subject.

The public media (TV/radio/newspapers) need to cooperate with government sectors to bring about an improved level of awareness of Qatari biodiversity issues. Special emphasis must be given to serving the educational and awareness needs of local people who live in and around protected areas. Many rural people, especially the older generations, have little formal education.

Because protected areas contain some of the best examples of the beauty of nature in Qatar they are of immense value for education and awareness. Protected areas serve as living laboratories where students, scouts, parents, educators and administrators can observe natural processes and the complex interrelationships of animals and plants and witness the benefits of biodiversity conservation.

SCENR's Environmental Education and Awareness Strategy (2000)

The SCENR is making every effort to increase the level of environmental education and awareness and its impact on humans. However the future of the environment is not very clear particularly when such global issues like sustainable development, globalization, free trade, and the countless multilateral agreements demand understanding and cooperation from everyone. This strategy provides a mechanism for the increase of environmental education and awareness among the public. It also aims to increase positive attitudes and behavior towards the environment.

SCENR's Proposed National Clean-Up Campaign

The terrestrial and marine landscape played an important role in the lives of most Qatari citizens throughout the centuries. However, as the country develops and expands, Qatar is experiencing some of the negative consequences of accelerated development namely the accumulation of garbage of all kinds. This has been particularly harmful to areas of natural beauty.

The aim of the Clean-Up Campaign is to mobilize the manpower and equipment available to a number of Ministries and Municipalities to remove garbage and recycle it where feasible. A well coordinated awareness campaign must go hand in hand with the clean up effort.

Action Plan

Informal Education and Awareness Activities

1- Raise Awareness of the NBSAP

After the NBSAP is translated to Arabic and widely disseminated it would be helpful to prepare a shorter and less technical "popular" version of the NBSAP for distribution to the wider public.

2- Launch a Public Information Campaign on the Role of SCENR

All Government departments and industries in Qatar need to understand the role and mandate of the SCENR and the importance of interacting positively with this Council. However many government departments are not aware of SCENR's role in protecting the environment.

3- Convince Decision Makers, Public Officials

Organize special briefing sessions for decision-makers in key departments and ministries to convince them of the need to incorporate biodiversity and environmental concepts and objectives into their policies, programs and activities. This will require the preparation of concise briefing documents on key issues and the organization of special briefing sessions for selected decision makers.

4- Enlist the Support of the Armed Forces

The armed forces, police, army and navy, can play an important role in conservation of biodiversity. This can be accomplished by simply making them aware of certain indicators in nature that they are likely to encounter in the performance of their regular duties. Special training courses need to be organized, at the different levels of command in the armed forces, to explain the significance of their contribution to the environmental "security" of the State of Qatar.

5- Encourage NGOs, Clubs and Organizations

Encourage NGOs, clubs and organizations interested in nature conservation to work with the SCENR to spread environmental awareness and to assist in environmental surveys and mapping exercises.

6- Popularize the Wise Use of Natural Resources
People need to know the importance of recycling non-renewable materials as well as the true cost of wasteful use of natural resources.

7- Encourage Public Media to Increase Biodiversity Programming
Encourage the television, radio and newspapers to increase the level of biodiversity programming particularly regarding the flora and fauna of Qatar and the requirements of the new Environmental Protection Law.

8- Spread Awareness Messages through Mosques and Local Functions.
Special emphasis must be given to serving the awareness needs of local people who live in and around protected areas especially older people.

9- Establish Municipal and Town Parks.
The SCENR and Ministry of Municipal Affairs and Agriculture need to cooperate to establish municipal and town parks that exhibit local plants and animals to please and enlighten the visitors.

Formal Education Activities

10 Encourage Publication of Popular Books on Biodiversity
Encourage the translation and publication of popular books on biodiversity.

11- Provide Institutions and Libraries with Environmental Literature It is important to equip academic institutions and libraries with modern computer technology to access information and to promote regular popular lectures on biodiversity in schools and clubs throughout Qatar.

12- Upgrade Curricula and Train Teachers on Biodiversity Issues.
The Ministry of Education should continue to upgrade curricula and prepare textbooks for primary, secondary, high school, and university students highlighting the importance of conserving biodiversity for a healthy and sustainable future. Also in collaboration with the SCENR, the Ministry of Education needs to train science teachers in the methods used to enlighten their students about the importance of biological diversity.

13- Develop Graduate/Undergraduate Programs in All Universities
Develop the graduate and undergraduate programs in all universities in Qatar to incorporate national biodiversity issues that include the scientific, cultural, economic and religious aspects of the subject.

14- Organized Outdoor Activities
A concerted effort must be made to introduce students to biodiversity in Qatar. This is most effectively done by organizing sponsored visits to protected areas for student groups, military trainees and youth clubs - preferably under the guidance of trained ecotourism guides.

Monitoring Indicators

1- Number and quality of textbooks and school curricula incorporating the study of biodiversity and using examples of Qatari issues.

2- Time devoted to biodiversity on Qatari TV, radio and newspapers.

3- Number of NGOs in Qatar.

4- Number of organized field trips and visitors to protected areas.

5- Number of Visitor Centers in and around protected areas.

Responsible Institutions

The Supreme Council for Education and SCENR in consultation with all the other ministries and organizations involved in education and public awareness.

3-9 INVASIVE ALIEN SPECIES AND BIOSAFETY STANDARDS

To protect natural ecosystems and human health from the planned introduction and/or accidental release of invasive alien species and genetically modified organisms (GMOs).

Current Status

Invasive Alien Species

Alien species (sometimes called exotic, introduced, non-indigenous or non-native species) are a serious threat to biodiversity. These alien species when introduced to an area where they are not native compete with other species for space and food, become predators of other species, destroy or degrade habitats, and transmit disease and parasites. A particularly intractable problem has been the spread of alien species in coastal and marine ecosystems. Unfortunately once an invasive species has taken hold, eradication can be very expensive or even impossible (Glowka et al).

In Qatar both the marine and terrestrial environments have had numerous planned introductions and accidental releases of alien species. Some of those alien species have become invasive such as pathogenic soil micro-organisms, insect pests on imported fruits and vegetables, and animal parasites. Particular mention should be made of the marine organisms that come in the discharged ballast water of oil tankers traversing the Arabian Gulf.

National Biosafety Standards

a) Naturally Occurring Organisms

For thousands of years, people have used various techniques to modify plants and animals to improve food production. Traditional fermentation techniques utilizing certain bacteria are still being used to transform grains into bread and milk into cheese.

Another form of traditional “low-tech” genetic manipulation is selective breeding, which makes it possible to promote preferred traits such as colors in flowers or higher yields from milk cows. People even created hybrids of different species, such as when they crossed a horse and a donkey to create a mule.

Most countries have come to understand the implications, both positive and negative, of the introduction of “low tech” genetic manipulation and of naturally occurring living organisms - and how to deal with them. In the severe cases of epidemics to plants, animals and humans, a large number of preventive measures have been tested and adopted - such as developing vaccines. As a result of those experiences, a large body of laws and regulations are now in force to control the movement of plants and animals and their products across national borders.

b) Genetically Modified Organisms (GMOs)

The sophisticated tools of modern biotechnology have created a "biotechnology revolution". Researchers can now take a single gene from a plant or animal cell and insert it into another species to give that species a desired characteristic, such as resistance to a destructive pest or disease. The result is commonly referred to as a genetically modified organism (GMO), or as a living modified organism (LMO).

Proponents of this powerful new science argue that biotechnology has the potential to boost food security, reduce the need for clearing more land for farms, raise sustainable yields in marginal lands, and reduce the need for irrigation and agro-chemicals. However, others are concerned about the possible risks that GMOs and LMOs pose for biological diversity – the ecosystems, species, and genetic resources whose interactions form the "web of life" on Earth. In fact the varieties and uses of GMOs, that include transgenic crops, have grown much more rapidly than our ability to understand or safely regulate them. This has raised serious doubts and fear in many scientific and consumer circles worldwide.

The Parties to the CBD adopted the Cartagena Protocol on Biosafety in January 2001 to ensure the safer transfer, handling and use of genetically (or living) modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health. Under the Protocol, Governments will decide whether or not to accept imports of GMOs on the basis of risk assessments. These assessments are to be undertaken in a scientific manner according to recognized risk assessment techniques. However, because the Protocol is based on the precautionary approach, importers can decide not to accept GMO imports if there is a lack of scientific certainty due to insufficient information.

Action Plan

A/ Invasive Alien Species

1- Prevent Introduction of Invasive Species

Qatar needs to review its quarantine legislation, regulations and practices so as to ensure that plants or animals, as well as their living parts such as seed, are not introduced if there is a risk that they may become harmful.

2- Support International Treaties on Invasive Species

Support regional and international treaties that prevent, reduce or control intentional or accidental introduction of invasive alien species.

3- Require Certificates of Origin

Prior to granting import permits for living organisms entering Qatar require importers to produce certificates of origin and description of the living organisms.

4- Improve Knowledge of Invasive Species

There is a need to collect information on the potential harm that importation of invasive alien species can cause to humans, plant and animal communities in Qatar.

5- Safeguard Protected Areas from Invasive Species
It is particularly important to prevent the introduction of invasive alien species to the protected areas in Qatar. If these invasive alien species are already in the protected area then they will need to be removed.

B/ Biosafety Standards

1- Appoint Expert Committee
A National Committee for Biosafety will need to be established in Qatar that has the scientific and technical expertise to study and monitor GMOs and their products, advise on regulatory requirements, and alert the Government of the threats they pose to humans and animals.

2- Improve Knowledge of Biosafety Issues
Considering the limited capacity in Qatar today there is a need to improve knowledge of the transfer, handling and use of genetically (or living) modified organisms. Qatar also needs to train government officials involved with importing GMOs and their products.

3- Support International Protocols on Biosafety
Qatar needs to support international protocols on biosafety, and become a signatory to the Cartagena Protocol on Biosafety of January 2001, that guard against the dangers to human health and natural biodiversity from the dangers of genetically modified organisms and their products.

4- Require Certificates of Origin
Prior to granting import permits require importers to produce certificates of origin and description of contents and methods of production.

5- Utilize Modern Screening Procedures
Utilize modern techniques and environmental screening procedures for importation of plant and animal species to assist in determining genetic origin of products.

6- Enact New Legislation for GMOs
Enact a new legislation for the import, handling, release and disposal of Genetically Modified Organisms (GMOs) and transgenic crops in Qatar. Refer to Cartagena Protocol on Biosafety.

7- Take Precautionary Measures Against all GMOs
Take precautionary measures against all genetically modified organisms and their products to avoid any possible dangers to human, plant and animal health and welfare. Refer to Cartagena Protocol on Biosafety.

8- Encourage Use of Native Plants and Animals
Encourage the use of native plants and animals, not introduced species, in agriculture and food processing industries to avoid introducing organisms of unknown genetic origin to Qatar.

Monitoring Indicators

1- Adequacy of quarantine legislation and number of regulations and practices that ensure that plants or animals are not introduced if there is a risk that they may become harmful to humans and the natural environment.

2- Level of actual measures taken to safeguard humans and the natural environment from genetically modified organisms and their products.

Responsible Institutions

SCENR in consultation with MMAA, Ministry of Public Health and Ministry of Commerce and Trade.

3-10 ENVIRONMENTAL MONITORING AND (EIA)

To activate environmental monitoring and impact assessments (EIA) to make sure that the conditions for the conservation of biodiversity and its sustainable use are being taken into consideration in all development projects.

Current Status

Importance of EIA

One of the most effective methods to make sure that environmental considerations are taken into account in development projects is to assess the effect that this development will have on the environment.

The distribution of vegetative species and ecological communities in Qatar need to be considered during land planning to ensure that developments are not placed in close proximity to fragile and rare ecological communities. The environmental impact assessment and environmental approval process must reflect the cumulative impact of urban, industrial and agricultural development on surrounding ecological communities.

Qatar Marine Environment Monitoring Program (QMEMP)

The SCENR commissioned the preparation of the QMEMP (see Section 3-3/Marine and Coastal Resources). For this monitoring program to achieve its expected efficiency it will need to be long term, continuous, consistent, easy to implement, satisfy basic criteria, comparable to other ROPME programs, and expandable. The monitoring program should also include the following features - monitoring stations; sampling frequency; sampling matrices; mandatory parameters; bio-indicators; analytical methodology; documentation and data reporting.

Coastal Atlas of Qatar

To properly manage the coastal ecosystems of Qatar (see Section 3-3/Marine and Coastal Resources) there is a need to know where special communities occur, their interrelationships with adjacent ecosystems and the impact of human activities.

The Coastal Atlas will undertake the following activities that are essential for proper monitoring and EIA:

1- Conduct an ecological survey of the coastline of Qatar
2- Compile geo-biological resource maps of the coastline
3- Compile oil spill sensitivity maps of the coastline
4- Store all relevant data in a digital database
5- Train students from SCENR
6- Publish and distribute the "Coastal Atlas of Qatar"
7- Publish a booklet on the "The Coastal Habitat of Qatar".

Action Plan

Short Term Activities

1- Finalize rules, regulations and guidelines on EIA
a) Finalize rules, regulations and guidelines on EIA
b) develop check-lists of development activities that are likely to have significant adverse impacts on biodiversity
c) strengthen institutional capacity to assess the impacts of development activities on biodiversity
d) encourage enhanced transparency and greater public participation in the environmental assessment process.

2- Hire Qualified Staff at SCENR
Hire staff in environmental, chemical and mechanical engineering and specialists in hydrogeology, air dispersion, toxicology and marine environments. Reduce dependency on free advice from external experts to avoid conflict of interest and rely more on dependable national experts.

3- Train Technical Managers
Training will be required for both technical managers and support staff in the areas of sample collection, field measurements, QA/QC procedures, data interpretation, toxicology and pollution control.

4- Develop Criteria for Discharges
Apply discharge criteria to all new off-shore facilities and phase-in those criteria for existing facilities; allow discharge of only fully treated formation water or re-injection on new projects; and require de-chlorination of effluent before discharge.

5- Require Landfill Monitoring
Require landfill monitoring and leachate collection systems as necessary and ensure that new landfills are properly designed to safely contain the organic and inorganic substances in them. Special attention needs to be paid to old construction materials and discarded machines.

Long Term Activities

6- Ties Between SCENR and MMAA
The SCENR needs to develop very close ties with the MMAA in all fields. For example MMAA groundwater data should be obtained and maintained in an electronic form and used by SCENR in the EIA process.

7- Integrate Biodiversity Information
Integrate biodiversity information into the environmental approval process at the landscape level and ensure that information from approved EIAs is retrievable.

8- Prepare Regulations for Land-Reclamation Projects
Survey coast for environmentally sensitive areas and prepare regulations for land-reclamation projects, dredging and mitigation measures to protect the marine environment.

9- Ensure that EIAs Cover Important Areas

EIAs will need to incorporate areas of high environmental value and any actual or proposed protected areas.

10- Ensure that EIAs Apply to All Industries
EIAs will need to apply to all industries particularly those that have the potential of discharging toxic materials into the environment. However for those industries already established it is important to make sure they abide by the rules and treat all their effluents.

Monitoring Indicators

1- Number of qualified staff conducting EIAs at the SCENR.

2- Level of biodiversity information and ease with which it is retrieved.

3- Number of landfills and the presence of leachate.

4- Number and effectiveness of regulations on land-reclamation projects.

5- Number of important projects covered by EIAs.

Responsible Institutions

1- The SCENR and MMAA are primarily responsible for environmental monitoring and EIAs in Qatar and their continuous cooperation is essential.

2- The Ministry of Energy and Industry.

3-11 MULTILATERAL ENVIRONMENTAL AGREEMENTS

To study, compare, and promote synergy among the various multilateral environmental agreements (MEAs) and regional environmental agreements ratified by Qatar

Current Status

Multilateral Environmental Agreements (MEAs) complement and reinforce each other. In many cases, comparable response policies or measures can simultaneously address objectives of a number of the agreements and the challenge is to harness the potential synergies among the various MEAs and integrate them in "mainstream" planning processes.

The impacts and root causes of desertification, climate change and biodiversity issues cut across a wide variety of economic sectors and responses to these threats will need to be taken into account as countries pursue their development objectives. Accordingly, it is essential that decision-makers integrate the Conventions into "mainstream" development policy and planning processes.

In fact Qatar has ratified a considerable number of (MEAs) as well as regional agreements, however implementing and reporting on the many different MEAs can be a time consuming and costly exercise particularly for a small nation.

Multilateral Environmental Agreements

1- The Convention on Biological Diversity (CBD)

The CBD was adopted at the Rio Summit in 1992 and came into force for Qatar in 1996 and the SCENR is the focal point of the convention. The CBD is composed of 42 Articles and the following require special mention:

Article 1 of the CBD summarizes the objectives of the Convention as:

- ✓ The conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Article 6 of the CBD calls on all parties to:

- ✓ develop national biodiversity strategies and action plans
- ✓ integrate the conservation of biodiversity into all the relevant sectors of the government as well as the national plans of the country.

Article 8 of the CBD is devoted to *in-situ* conservation and requires that each contracting party shall, as far as possible and appropriate:

- ✓ establish a system of protected areas
- ✓ create economic incentives for conservation and sustainable use of biodiversity
- ✓ adopt procedures to assess the biodiversity impacts of proposed projects
- ✓ protect rights of indigenous and local communities

2- The Kuwait Regional Convention for Cooperation on Protection of the Marine Environment from Pollution (ROPME)

ROPME was signed in 1978 and came into force for Qatar in 1979. The SCENR is the focal point of the convention.

The objective of the convention is to prevent, abate and combat pollution of the marine environment. The member states are Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and UAE.

3- Convention Concerning the Protection of the World's Cultural and Natural Heritage (UNESCO, 1972)

Came into force for Qatar in 1984 and the focal point for the convention is the Ministry of Culture.

The World Heritage Convention provides the basis for international recognition for cultural or natural sites of outstanding global importance.

4- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES was adopted in Washington on 3 April 1973 and it came into force for Qatar in 2001. The SCENR is the focal point of the convention.

The objective of CITES is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. More than 30,000 species of fauna and flora are protected with the level of protection dependent on the type of trade and risk to the species survival. The types of regulated trade include live plants and animals and different types of products such as food products, wooden musical instruments, timber, tourist curios, medicines and exotic leather and fur goods.
After joining CITES, an act on Trade of Wildlife and its Products was proposed to regulate trade in wildlife and wildlife products in Qatar.

5- Convention on Combating Desertification (CCD)

The United Nations Convention to Combat Desertification was adopted at the Rio Summit in 1992 and came into force for Qatar in 1999. The SCENR is the focal point of the convention.

The objective of this Convention is to combat desertification and mitigate the effects of drought and/or desertification through effective action at all levels, with a goal of contributing to sustainable development in affected areas.

6- Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted in 1989 and came into force for Qatar in 1995. The SCENR is the focal point of the convention.

The Convention was developed to control movement and dumping of hazardous wastes, especially from developed to developing countries. Wastes considered under the convention are those hazardous to humans or the environment because they are toxic, poisonous, explosive, corrosive, flammable, eco-toxic, or infectious.

7- The Convention for the Protection of the Ozone Layer (Vienna Convention)

The Convention took four years to prepare and was signed in 1985 by twenty countries. By June 2002, 184 countries had ratified the convention. Entered into force for Qatar in 1996 and the SCENR is the focal point of the convention.

The objective of the Vienna Convention is to protect human health and the environment from adverse effects resulting from the depletion of the ozone layer.

8- Convention on the Conservation of Wildlife and Natural Habitats in the Countries of the Gulf Cooperation Council

The convention was signed in 2003 and the SCENR is the focal point.

The aim of the convention is to conserve natural habitats and wildlife based on sound principles and methods. There is particular emphasis on endangered species of wildlife that are found along boundary areas of two or more states or those species that migrate across the airspace or territorial waters of the Gulf countries that signed the convention.

Action Plan

CONVENTION	SUMMARY OF ACTIONS
CBD	❖ Implement the national strategy for conserving biodiversity. ❖ Ensure that other government authorities are aware of the need to integrate the conservation and sustainable use of biodiversity into plans, programmes and policies under their jurisdiction. Train staff on how to apply this information to their projects. ❖ Complete the biodiversity inventory through targeted field surveys. Include information on distribution, critical habitat, population trends and risk of extinction in Qatar and globally. Ensure that this information is available in a format that is meaningful to everyone. ❖ Develop programs to monitor the populations of species at risk (Dugong, Sea Turtle and Socotra Cormorant) and species that offer potential for sustainable use (marine fish, game hunting); ❖ Develop a monitoring plan to measure the effects of processes having potentially adverse effects on biodiversity. ❖ Ensure that existing environmental databases for biodiversity are kept current and all relevant information is stored in a functional format. ❖ Establish protected areas to conserve ecosystems and those species of high conservation and economic concern. Ensure that protected areas have management plans. ❖ Ensure that the Environmental Impact Assessment process reflects both areas of high value for biodiversity conservation and any protected areas. Areas of high value for biodiversity conservation need to be identified to environmental assessors. ❖ Identify areas of high environmental value for conserving biodiversity and develop management plans as necessary. This includes the rehabilitation and restoration of ecosystems and recovery of species. ❖ Promote and maintain local knowledge, innovations and practices for the conservation / sustainable use of biodiversity; ❖ Ensure that endangered and threatened species are protected from hunting, habitat loss, pollution and other threats. Develop a national or regional framework to evaluate the level of risk to species. ❖ Continue environmental awareness and educational plans focusing on the importance of conserving biodiversity and the actions that can be taken both individually and by society.
ROPME	❖ Regularly review national standards, laws and regulations relating to environmental protection and update them. ❖ Expand the monitoring plan to include ambient air quality and more parameters for coastal waters. ❖ Prepare regulations on ocean filling projects and dredging, requiring mitigation measures to protect the marine environment. ❖ Survey the coast for environmentally sensitive areas and protect from dredging. Incorporate into the environmental assessment process for future planning. ❖ Continue to participate in ROPME activities.
World Heritage Convention	❖ Complete biodiversity inventory and update the status of protected areas; ❖ Train staff and industry on how to enhance natural and cultural heritage protection in the environmental assessments; ❖ Support and fund scientific study on topics about natural heritage protection and conservation;

	❖ Provide the appropriate legal, administrative and financial resources to protect natural heritage.
CITES	❖ Qatar's compliance with CITES is dependent on the passing of the Draft Law on Trading in and Dealing with Species and their Products Endangered by Extinction in the State of Qatar.
CCD	❖ Promote opportunities for local populations to participate in actions to combat desertification and environmental protection. ❖ Provide opportunities for public input on policies and plans that involve environmental protection and desertification. ❖ Include a section on combating desertification in the Environmental Protection Law.
Basel Convention	❖ Develop a newsletter for importers, exporters and small industry regarding their duties under Basel and environmental regulations and the environmental protection law; ❖ Make hazardous waste minimization one of the goals of the Environmental Protection Law (article 3 and 28) and a requirement of environmental approval/license; ❖ Develop an environmentally sound hazardous waste disposal facility as quickly as possible; ❖ Develop and maintain an inventory of hazardous waste storage facilities and inspect them on a regular basis to ensure that there is no improper disposal of hazardous wastes; ❖ Maintain a monitoring and enforcement program to ensure that no hazardous wastes are moved illegally and that appropriate measures are taken to prevent pollution; ❖ Include a penalty for contravention of article 30 of the Environmental Protection Law. Include a requirement to maintain a register of hazardous waste and to take all reasonable precautions and measures to prevent damage to the environment; ❖ Ensure labeling requirements under the Procedure for Disposal of Solid Waste apply to all hazardous material and that they include information as listed by Annex VB of Basel.

Monitoring Indicators

1- Level of implementation of the terms and conditions of the Multilateral Environmental Agreements that concern Qatar.

2- Number of qualified staff in charge of the Multilateral Environmental Agreements.

3- Level of participation in the meetings called by the Multilateral Environmental Agreements.

4- The degree of synergy achieved between the Multilateral Environmental Agreements.

Responsible Institutions

1- The SCENR and the Ministry of Foreign Affairs are primarily responsible for most of the Multilateral Environmental Agreements in Qatar.

PART FOUR
MECHANISMS FOR IMPLEMENTATION

4-1 NATIONAL INSTITUTION MANAGING THE STRATEGY

The Supreme Council for the Environment and Natural Reserves (SCENR)

In 2000 the Supreme Council for the Environment and Natural Reserves (SCENR) was created by Law No. 11. The law also created a Secretariat, chaired by a General Secretary to carry out the Council's mandate. The Council effectively replaced the previous Permanent Committee for the Protection of the Environment. The former Environment Department formed the basis of the SCENR Secretariat.

Responsibilities of the SCENR

1- Develop general policies for the protection of the environment
2- Develop work plans to implement the policies
3- Monitor the activities, procedures, and practices related to the protection of the environment
4- Prepare draft legislation, by-laws, decisions, and rules for the protection of the environment
5- Establish national environmental databases and a reference laboratory
6- Evaluate studies conducted for the protection of the environment during planning for any major development project and advising on environmental effect of such projects before approving implementation
7- Determine the problems resulting from pollution and deterioration of the environment and use resources within the state to implement solutions
8- Represent the State at international and regional forums and conferences related to the protection of the environment
9- Follow up with Ministries, government and non government bodies and other parties for the implementation of provisions of agreements
10- Draw up and implement plans for training of local staff in the field of the protection of the environment
11- Incorporate education and public awareness in the protection of the environment and endangered natural species
12- Propose the annual budget for the Council.

4-2 IMPLEMENTING THE STRATEGY

The SCENR will be entrusted with developing, financing and monitoring an annual list of projects that embody the goals of biodiversity conservation and sustainable use as identified in the National Biodiversity Strategy & Action Plan.

Partnerships

The State of Qatar ratified the CBD and fulfilled its obligation under that convention by preparing a NBSAP as required under Article 6(a). The next step is for Qatar to integrate the conservation and sustainable use of biological diversity into all the relevant sectors of the government and national plans of the country as required under Article 6(b) of the CBD

Qatar fully realizes that NBSAPs need to be designed and implemented through partnerships - where the different parties work together as partners and not as competitors. In such partnerships, the roles and responsibilities of all stakeholders, as well as their agreement on modes of collaboration, must be properly defined to avoid conflict.

The NBSAP has proposed a list of eleven sets of action plans to guide the implementation of the Strategy. The proposed action plans list priority activities, projects and programs that require immediate attention.

Projects

The emphasis on "projects" as the principal implementation mechanism is based on the need for the SCENR to direct activities with definite terms of reference, timetables and payment schedules. Without these factors it is easy to lose tract of such projects. In addition to the "projects" approach to implementing the NBSAP, improvements to the conservation and sustainable use of biodiversity could come about by incorporating biodiversity considerations into regular programs and activities of sectoral departments.

In order for the SCENR to develop, finance and monitor an annual list of project proposals all concerned ministries, organizations and institutions in Qatar need to prepare detailed action plans/project proposals. These plans/proposals will need to reflect the level of experience, human resources and budgets those institutions are prepared to commit to conserve and sustainably use biodiversity. This process will require the full time effort of a National Coordinator supported by a Coordination Unit for the implementation of the NBSAP

Coordination Unit

The Coordination Unit should be located in the SCENR and made up of the National Coordinator who will be assisted by experts, consultants, technical working groups and office staff. The responsibilities of the Coordination Unit include:

1- Developing awareness programs that focus on the NBSAP.

2- Organizing training in collaboration with all relevant ministries, organizations and institutions in Qatar to build institutional capacities to implement the NBSAP.

3-Preparing detailed Action Plans that include the Terms of Reference of the "Proposed Projects" for implementation of the NBSAP.

4-Selection of the appropriate ministry / institution / company / individual to implement each of the "Proposed Projects".

5- Preparation of a contract for each "Proposed Project" for the implementing agency and to sign.

6- Monitoring the implementation of all the "Proposed Projects".

7- Payment of the fees / costs of each "Proposed Project" to the implementing agency according to the terms of the contract.

Sources of Funding

The success of the NBSAP will depend on the level of budget allocations set aside by SCENR as well as those of concerned ministries, organizations and institutions for the preparation and implementation of detailed action plans/project proposals.

It would be useful for the SCENR to consider new and innovative sources of funding for the NBSAP such as:
a) charging for ecosystem services;
b) the introduction of new taxes, fees and royalties (for example on oil and gas exploitation); and
c) the return of a proportion of the fees paid for fishing licenses and hunting permits to conservation activities.

Stakeholder Participation

Another factor that will contribute to the success of the NBSAP is active stakeholder participation that needs to be built up over time. The Coordination Unit must extend an open invitation to all institutional and non-institutional stakeholders to join meetings and express their opinions. However, during the intervals between meetings, all interested stakeholders are encouraged to contact the SCENR at its office in Doha.

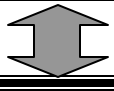
Reviews and Reports

The NBSAP needs to be viewed as a dynamic and cyclical document that will be reviewed and revised at regular intervals. Considering the pace of change that Qatar is undergoing a review and revision of the NBSAP by the SCENR every five years is recommended. Annual progress reports by the SCENR are also recommended to see if the activities recommended in the NBSAP are being implemented properly and on time.

4-3 ORGANIZATIONAL CHART FOR IMPLEMENTING THE STRATEGY

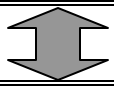
Supreme Council for the Environment and Natural Reserves (SCENR)

The SCENR by virtue of its legal mandate:
1- Serves as the focal point for biodiversity in Qatar
2- Chairs the Steering Committee for the NBSAP
3- Appoints the National Coordinator, Experts, Consultants and staff of the Coordination Unit for the implementation of the NBSAP



Steering Committee of the NBSAP

The Steering Committee develops and implements the NBSAP and is composed of the following members:
1- Secretary General of the SCENR - Chairman
2- National Coordinator of the NBSAP – Secretary
3- Representative of SCENR
4- Representative of Ministry of Municipal Affairs and Agriculture
5- Representative of Ministry of Interior (Coast Guard Division)
6- Representative of Higher Planning Council
7- Representative of the Qatar Tourism Authority
8- Representative of the University of Qatar (SARC)
9- Central Municipal Council
10- Representative of NGOs



Coordination Unit to Implement the NBSAP

Headed by the National Coordinator, assisted by experts, consultants, technical working groups and office staff, in collaboration with all relevant ministries, organizations and institutions in Qatar, is responsible for:
1- Organizing training to build institutional capacities to implement NBSAP
2- Developing awareness programs that focus on the NBSAP
3-Preparing detailed Action Plans that include the Terms of Reference of the "Proposed Projects" for implementation of NBSAP
4-Selection of the appropriate institution / company / individual to implement each of the "Proposed Projects"
5- Preparation of a contract for each "Proposed Project" for the SCENR to sign
6- Monitoring and payment of each "Proposed Project" according to the terms of the contract.

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