

Chapter 7: Nature Conservation and Biodiversity

Introduction

Nature conservation sector witnessed many significant events and achievements; most significantly is the declaration of 3 new protectorates: Red Sea Northern Islands, al-Gilf al-Kabir and Dabbabeya. Thus, natural protectorates amounted to 27 on an area of some 150,000 km², 15% of Egypt's area. Protectorates cover most of the distinguished ecosystems and habitats sheltering more than 20,000 kinds of birds and animals.



Picture (1-7) Wadi al-Hitan Natural Protectorate

MSEA Achievements

First: Natural protectorate main activities

1. Natural Protectorates Departments launched several cleaning and conservation campaigns in Wadi Degla, Ras Mohamed, Nabq, White Canyon, Wadi el-Gemal and Elba; facilitated many medical caravans to St. Catherine, Abu Gallum, Wadi al-Gemal and Elba protectorates; involved local residents in many activities in the protectorates; and established new NGOs in Wadi al-Alaqui, Wadi al-Gemal and Elba protectorates.
2. MSEA prepared two profiles for St. Catherine and Wadi al-Gemal parks to be included in UNESCO's Man and the Biosphere Program (MAB); participated in preparing Mount Qatrani, Qarun, profile to declare it as world heritage; and developing the national report for the Protocol Concerning the Mediterranean Specially Protected Areas (Mediterranean Action Plan (MAP)).



Picture (7-2) Scenes from natural protectorates

3. MSEA, through the Capacity Building and Institutional Support to Nature Conservation Sector Project, participated in several exploratory missions to Qattara Depression, al-Maghara Mountain and al-Gilf al-Kabir, in preparation to declare them new protectorates. MSEA also signed many protocols of cooperation with Cairo governorate (Shaqq al-Thoban area), Cypriot Ministry of Agricultural in (natural wealths), and Spain (ICZM in Matrouh and Salloum). Moreover, MSEA supported many NGOs (Natural Protectorate Lovers, Abu Salama, Science and Technology, and Ecology) by preparing lectures and attending their annual conferences and many activities in natural protectorates.
4. Many Ministerial Decrees were issued to secure citizen safety, maintain biodiversity, and protect national economy, such as MSEA Ministerial Decree on Banning Bird Hunting in Accordance with Anti-Avian Influenza Program; Minister of Agriculture's Decree on Banning of Aquarium Fish Hunting from Coral Reef Areas; Red Sea and South Sinai Gubernatorial Decrees on Banning Fishing in Natural Protectorates; and Decree by the General Authority for Fish Wealth Development Chairman on Banning Fishing, Displaying or Handling Sea Cucumber within Egypt's Regional Waters.
5. Conducting training courses for attorney-generals in the Judicial Studies Center, Abbasseya, and training courses for tour guides and drivers in Ras Mohamed Park, and scout jamborees in several protectorates to raise the awareness of their roles and the importance of their conservation for socio-economic development and future generations.
6. Conducting "Natural Protectorate Economic Planning" Workshop attended by 70 protectorate directors, cadres and projects representatives. It featured the concept, value and technique of economic planning as a tool for protectorate sustainable management, as well as identifying MSEA Nature Conservation Sector staff roles in developing both the National Nature Conservation Economic Plan and Wadi al-Rayan and Ras Mohamed Park Economic Plans. The implementation of such plans requires supporting decision makers to achieve financial sustainability and decentralized protectorate action, as well as partnering with the private sector and civil society to support economic plan activities.
7. Legal measures were taken against many environmental accidents and violations inside and outside natural protectorates. These included 13 boat collisions with coral reefs, 2832 charge evasion, Red Sea oil pollution, rabbit and gazelle hunting (Wadi al-Gemal), and tourist development violations such as constructions on shore restricted areas and filling-up works back the corals.
8. Possession reports were filed for violations of possessing sea creatures: 143 coral reefs by different nationalities (Russian, German, Ukrainian, Austrian, French, Serbian, Israeli, Polish, Romanian and Syrian); 6 wild creatures (crocodiles, mongooses, foxes, gazelle, hares and goats) by different nationalities (Palestinian, Egyptian, Russian and Israeli).
9. Conducting workshops on safety, control and security in natural protectorates; red list of threatened species, evaluating management effectiveness in Wadi al-Rayan, St. Catherine, Ras Mohamed and Qarun protectorates; and establishing biosafety information exchange chamber.



Picture (7-3) Workshop at a nature reserve

10. Protectorates revenues increased in 2007 amounting to EGP 22m, a 14.2% increase from 2006, due to environment researchers' efforts in protectorates to encourage tourism, particularly Ras Mohamed.

In 2007, almost 2m Egyptian and foreign tourists visited natural parks: Red Sea (50%), Ras Mohamed (29%), St.Catherine (18.7%) and other parks.

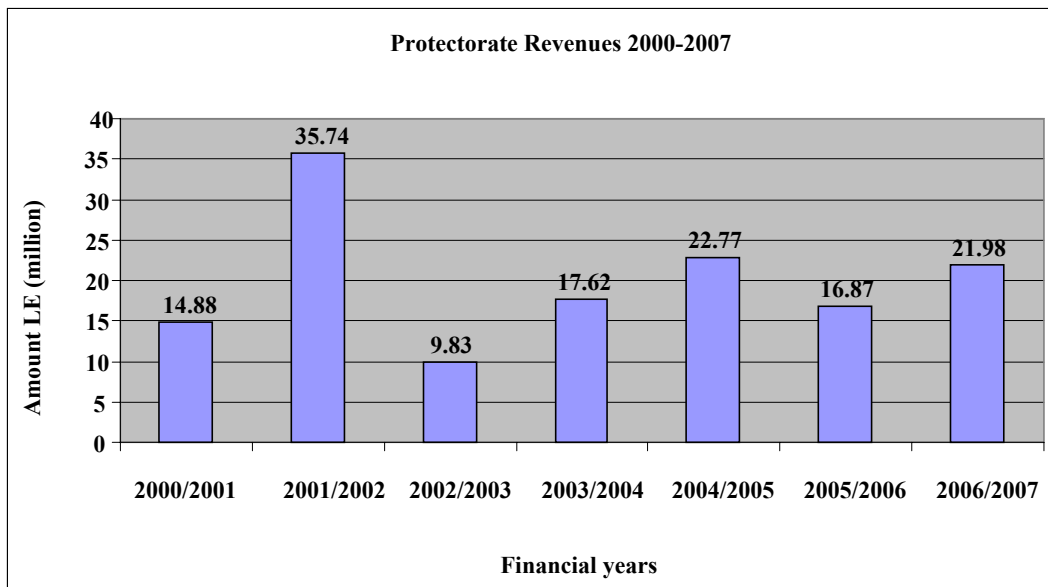


Figure (8-1) Protectorate Revenues 2000-2007

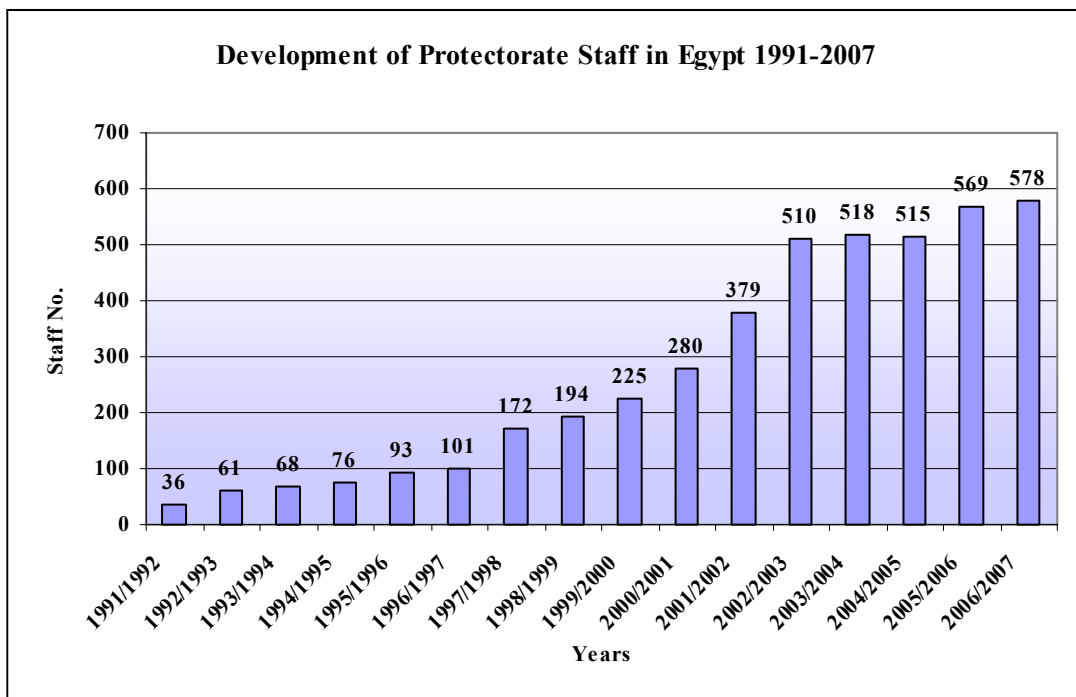


Figure (7-2) Development of protectorate staff in Egypt 1991-2007

Second: Biological and Geological Monitoring

1. Monitoring and evaluation was made for natural plant – such as Sinai Thyme – conditions in different areas of St. Catherine protectorate, especially high mountains. Also, a study on the floral cover in Nabq reserve was finalized, as well as discovering an endemic species in al-Omayed protectorate; *Ebeneus armitagi*, an endangered species at the southern Mediterranean level, and two new plant species in Wadi al-Rayan protectorate. The most significantly monitored fauna was the jackal in Elba, striped hyena in Siwa, Sinai barbastelle in St.Catherine (never seen since 1924), large numbers of lappet-faced vultures (17) in Shalateen and the Egyptian vulture in Elba, in addition to increased numbers of Egyptian gazelle in each of Wadi al-Gemal, Elba, St. Catherine, Nabq, Wadi al-Assiuti protectorates, and Nubian ibexes in both Wadi al-Gemal and Elba. Such species are threatened worldwide. Furthermore, 42 species of butterflies in St.Catherine were monitored as well as some 700 tortoises in Zaraniq and al-Omayed.
2. Bird migration: more than 150 species of birds were monitored for registration. It was shown that they had taken various routes compared with previous years due to seasonal changes in temperature and wind in 2007, where Khamsin wind continued till June, impacting bird migration, particularly white stork.
3. Wadi al-Rayan bird numbering station was finalized; thus, numbering stations amount to 4 in each of Borollos, Aswan (Saloga and Ghazal), Red Sea (Hurghada and Wadi al-Gemal) and Wadi al-Rayan.
4. 20 mermaid fossils were discovered in Om al-Soun, north east Mount Qatrani (Qarun), as well as an archeological area in Deir Abu Lifa (Qarun) with many caves, river sediments at the peak of Mount Qatrani, in addition to many fossils of new marine mammals for the first time in Wadi al-Hitan, Wadi al-Rayan protectorate.
5. Red Sea and Aqaba Gulf coasts witnessed two phenomena: first, Red Tide in April where (microscopic) red algae reproduce intensively causing water discoloration into red; second, low tide that led to emergence of coral reefs above water surface, leading to a limited absorption of corals.
6. Field studies revealed a large increase in marine turtles in both Red Sea islands and the Mediterranean coast compared with previous years (more than 100% in Zabargad and Gifton Islands); dolphins in Samdai, Marsa Alam, Hurghada and Ras Mohamed; for the first time humpback whale (threatened species) in the Gulf of Aqaba; mermaid in Abu Diab, Hamata, Wadi Lahmi, Torfa al-Masharegh, Shalateen; and whale and hammerhead sharks in the Red Sea.



Picture (7-4) Zaitran at St.Catherine protectorate



Picture (7-5) Red Sea low tide phenomenon

Third: Ex-situ biodiversity conservation

1. Activities focused on conserving threatened species in cooperation with the private sector by implementing reproduction programs, raising several awareness campaigns, organizing the acquisition of living organisms for learning and scientific research purposes, cooperation with border guard and environment police in seizure campaigns over markets selling threatened species (Egyptian tortoise, foxes, Egyptian gazelle and falcons), and confiscating species hunted and carried by tourists and imposing fines on them.
2. The reproduction program started the second phase based on continuing reproduction till the second and third generations, where good results were achieved for more than 20 species. For instance, the program started in 2000 with 67 mammals increasing to 215 animals. The number of Egyptian gazelles rose from 6 to 59 since inception (10 times the original number); and each of the Nubian ibex, barbary sheep and rock hyrax rose to 28 out of 4 at inception (7 times the original number). Furthermore, new births of striped hyena were successful; tortoises reached 458 out of 5 at inception; Egyptian geese rose from 7 to 1447. For medicinal plants, 43 species were reproduced in addition to successful cultivation of 32 species in Sharm El-Sheikh Al-Salam International Park on an area of 6.5 feddans.

Table (7-1) Reproduction Program Reptile Ex-Situ Conservation

Sr.	Species	Original in-situ No. 2002	No. after Reproduction in 2005	Current No. in 2007	Reproduction Source
1	Egyptian Tortoise	24	25	37	Egypt, Northwest coast
2	Egyptian Tortoise (North Sinai)	9	9	11	Egypt, Sinai North coast
3	African Sulcata Tortoise	5	212	458	Egyptian-Libyan-Chadian-Sudanese borders
4	Greek Tortoise	3	2	11	Greece
5	Nile Turtle	7	7	7	Nasser Lake
6	Water Turtle	5	5	5	Red Sea
7	Desert Monitor	17	17	17	Egypt, North Sinai Desert
8	Nile Monitor	7	7	7	Egypt, Nile
9	Egyptian Dab Lizard	2	2	2	Egypt, Sinai
Total		79	286	555	

Table (7-2) Reproduction Program Mammal Ex-Situ Conservation

Sr.	Species	Original In-situ No. 2002-2003	No. after reproduction 2005	Current No. 2007	Reproduction Source
1	Egyptian Gazelle	6	36	59	Egypt, Sinai Peninsula; Eastern Desert
2	Nubian Ibex (Mountain goat)	4	17	28	Egypt, Sinai Peninsula
3	Barbary Sheep	4	20	28	Western Desert
4	Striped Hyena	4	5	8	Egypt, Sinai Peninsula
5	Caracal	1	1	5	Egypt, Sinai Peninsula
6	Swamp Cat	2	6	6	Egypt, Delta
7	Wild Cat	6	6	3	Western Desert
8	Fennec Fox	13	13	13	Egypt, Sinai Peninsula
9	Rock Hyrax	4	15	27	Egypt, Sinai Peninsula
10	Spiny Mouse	8	10	10	Egypt, Sinai Peninsula
11	Large Gray (Egyptian) Mon-goose	11	11	13	Egypt, Delta
12	Baboon Monkey	4	12	15	Saudi Arabia, Sarawat Mountains
Total		67	152	215	

Table (7-3) Birds Ex-situ Conservation results in Reproduction program

Sr.	Species	Original In-situ No. 2002	No. after reproduction 2005	Current No. 2007	Reproduction sources
1	Egyptian Geese	7	70	144	Egypt, Nile Valley
2	Egyptian Vulture	2	2	2	Egypt, Nile Valley
3	African Black-Necked Ostrich	2	34	44	Africa
4	Brown Vulture	2	2	3	Egypt, South Eastern Desert
5	Grey Vulture	1	1	2	Egypt, Eastern Desert
6	Bald Hawk	2	2	2	Egypt, South Eastern Desert
7	White Swan	9	9	2	Egypt, Manzala Lake
8	Black Swan	5	9	11	Egypt, Manzala Lake
9	Flamingo	16	16	16	Egypt, Manzala Lake
10	White Stork	13	13	13	Egypt, Manzala Lake
11	Crane	9	9	9	Asia
Total		68	167	248	

- Invasive species are the second cause for species extinction and biodiversity loss, leading to a significant economic and social loss adversely impacting public health and flora and fauna. The Convention on Biological Diversity called member states to take this issue into consideration, which necessitated national efforts to confront invasive species in the Egyptian environment. Such efforts started by defining these species (55) and taking possible necessary measures of combat. For example, mesquite tree spread locations were identified in Elba protectorate and plotted on maps, then removed through cooperation with local residents. Nevertheless, combating invasive species requires several facilities in terms of human capacities and financial and technical resources; a national program in which all relevant bodies are involved is required.

National legislations for biodiversity conservation are activated and conserved species list is updated according to international standards set forth by conventions and international organizations by virtue of which licenses are issued and wildlife use is organized as per Law 4/1994. Moreover, the Ministry of Justice approved draft law prepared in 2006 on biological safety (transboundary handling of genetically modified (GM) living organisms), and measures are underway to issue a Presidential Decree promulgating the law and submitting it to both Shura Council (Upper House) and People's Assembly (Lower House). Furthermore, a new legislation on wildlife intellectual property rights and a strategy for medicinal flora conservation are being developed.

Fourth: Combating Avian Influenza

- MSEA implemented an active monitoring program by selecting the best representation area based on previous experiences, bird movement deployment and development methods. 7 main areas were approved with 25 sites in 11 governorates to fully cover the Mediterranean coast, to follow this southward-heading movement, and to select the best representation of bird stops in Sinai Peninsula. Monitoring depended on expanding the scope of supportive entities (familiar shooting clubs, hunting amateur associations, local hunters, experts from Wetlands International, World Organization of Animal Health (OIE) and NAMRU3). 6432 samples of wild migrant and resident birds belonging to 73 species were collected in 2007.
- Laboratory detection depended on two reference laboratories: NAMRU3 in Egypt and the French Agricultural Research Center for International Development (CIRAD) in France. Primary analysis results from NAMRU3 laboratories revealed more than 20 positive samples of Low Pathogenic Avian Influenza (LPAI) subtype A that were sent abroad (Atlanta, USA) to identify the type of the second part of virus pattern, N. CIRAD results proved 14 positive samples of LPAI subtype A and other positive 8 samples of H7 activation, but these were LPAI.
- MSEA action measures included supporting the public awareness raising program, advising communities, and spreading awareness at elementary (105 schools), public and private education (6universities and 30 institutes) levels. All public libraries in Cairo and Giza (10,000 awareness brochures and 100 posters) were covered, as well as city councils with high density population and poultry density, particularly in Qaliubeya.



Picture (7-6) avian flu combat staff in natural Protectorates

MSEA operation room received 3221 calls complaining and inquiring of the disease, prevention methods, how to handle birds, and receiving advice.

Fifth: International Events, National Committees and Scientific Reports

1. MSEA participated in many international and regional conferences in each of Lithuania (30th Meeting of the World Heritage Committee), Greece (Mediterranean Ecosystems Methodology), Italy (Special Protected Areas), Sudan (Nile Basin Initiative), Bahrain (Environmental Impact Assessment), Tunisia (Sustainable Hunting of Migratory Birds), Saudi Arabia (Arab Union for Natural Protectorates), Canada (Biosafety), and Syria (Biodiversity Convention). It also participated in several conferences held in Cairo such as: 2020 Horizons (Mediterranean Environment Ministries), Arab League (Biodiversity International Conventions), North African States National Committee (New Partnership for Africa Development), the first Arab Media Forum on the Environment and Sustainable Development, and Botanic Gardens.
2. MSEA participated in the activities of several national committees such as the National Committee on the Gene Bank (Ministry of Agriculture); the National Committee on Marine Sciences (Academy for Scientific Research and Technology); Protecting IPRs (Ministry of Foreign Affairs); Tourist Activation (Ministry of Tourism); UNESCO National Committee (Ministry of Higher Education); Genetic Resource Policy Support Program (Ministry of Agriculture); National Committee on Natural Wealth Conservation (Academy for Scientific Research and Technology); National Committee on Fish Wealth (National Institute for Marine and Fishery Sciences); Project for Developing 420 Backlog Villages (National Center For Planning State Land Uses); and the Egyptian Decentralization Initiative (Ministry of Local Development).
3. Numerous scientific reports were issued including the first two parts of the Medicinal Plants Encyclopedia; Natural Protectorates: Present and Future; Biodiversity in Egypt, Red List of Threatened Species (Mammals, Birds, Reptiles, Butterflies and Plants); Egyptian Bats, Red Sea and Ras Mohamed Coral Reef Status; Sustainable Use of Mangroves; Wild Plants and Birds in St. Catherine, Saloga And Ghazal; Arabic Names in Siwa, Western Desert Al-Gilf al-Kabir Protectorate; Biodiversity Status in Egypt; MSEA Achievements in Biodiversity; Database of Egyptian Biodiversity Experts; Climate Changes; Avian Influenza; Wadi al-Rayan Protectorate Natural Springs; Natural Protectorate Annual Reports; and Manual of Environmental Best Practices For Activities Related To Coral Reefs Adjacent To Red Sea Tourist Resorts.



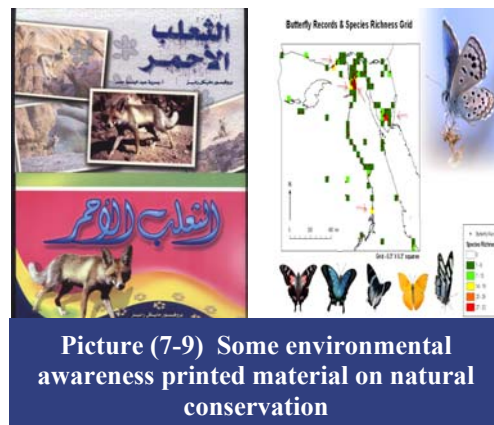
Picture (7-7) Scientific reports on nature conservation

Sixth: Environmental Awareness

1. MSEA participated in many distinct activities, most significantly in major IT development by creating many websites on natural protectorates and biodiversity, biodiversity and biosafety information exchange rooms, and biodiversity e-forum, in addition to publishing Nature Conservation Sector monthly bulletins (15 so far), printed material on natural protectorates (15), and Wadi al-Rayan Tourist Guide. Furthermore, a set of footages was developed on Wadi al-Hitan (in both Arabic and English), environmental tourism in natural protectorates, Wadi al-Gemal, and animated cartoon series for young (4-8) and elder children (8-13) about Salhoof (humorous name for a tortoise/turtle), Bufo, the Egyptian Sailor, Farfousha and Egyptian Digla.



Picture (7-8) Booklets on environmental awareness “Egyptian Farfousha”



Picture (7-9) Some environmental awareness printed material on natural conservation

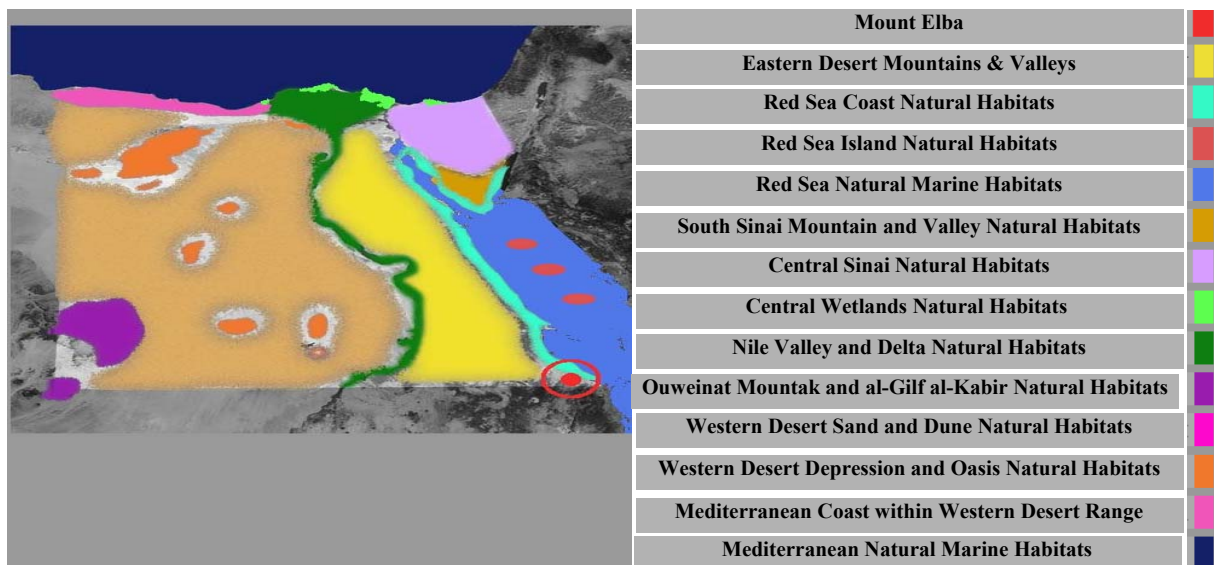
Seventh: Economic Activities

1. In light of the presidential electoral platform calling for increasing job opportunities, implementing investment projects with new developed thoughts, and tourist activity integration in natural protectorates while maintaining natural wealth, EIA studies were developed for three major projects providing more than 10,000 job opportunities in partnership with the private sector as follows:
 - Developing Saloga and Ghazal protectorates by creating a crocodile farm.
 - Developing Lake Qarun north coast through a large project for salt and mineral extraction (EMAC Co.).
 - Tourism development project on an area of 2760 feddans and 10 km long.
2. MSEA developed a primary study on biodiversity economics in Egypt, focusing on goods and services provided by ecosystems and biodiversity in natural protectorates and developing insect pollens for wild plants and cultivars. The study showed that natural protectorates provide goods and services costing some EGP 12bn annually; insect pollen revenues are estimated at EGP 13.5bn annually.
3. Developing economic plans for Wadi al-Rayan and Ras Mohamed protectorates as a model applicable under international and national expertise in cooperation with beneficiary entities interested in conserving natural wealth in protectorates. Techniques enhancing the management of such resources and providing sustainable funding for decentralized conservation activities are followed according to specified standards. Besides, a

general economic plan is being prepared for drafting a clear economic policy supported by ministries, civil systems and specialized human resources.

Eighth: International Cooperation Nature Conservation Projects

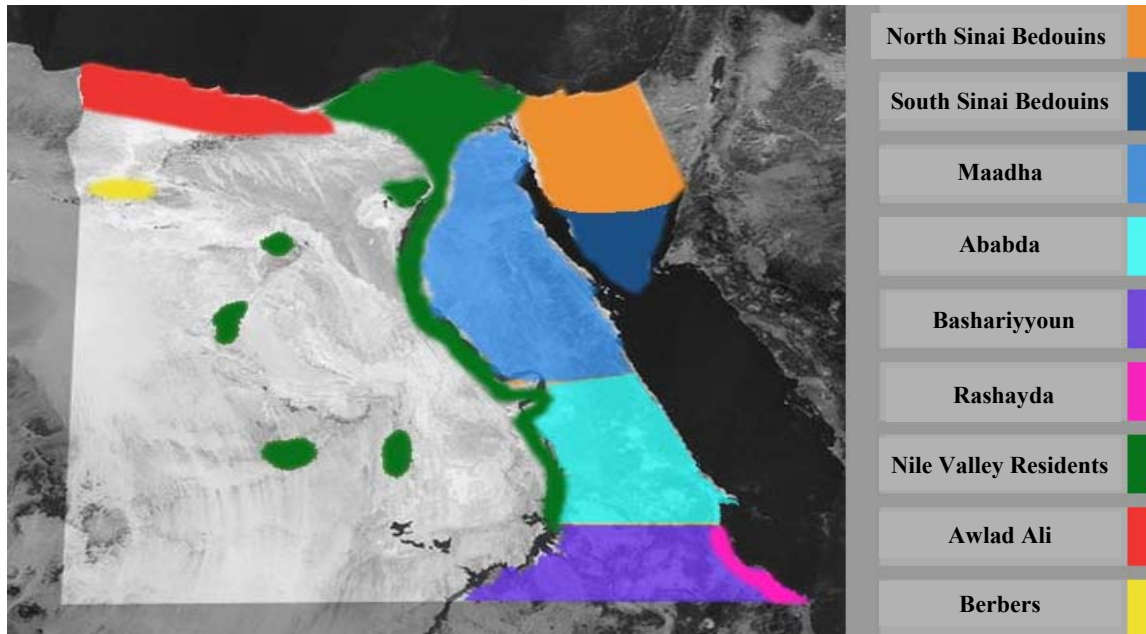
1. Projects funded by donor countries and agencies are divided into 4 groups:
 - **First:** projects ending during 2006-2007 such as Wetlands, Mangroves, and Biodiversity Support, Conservation and Development.
 - **Second:** projects continuing during 2007-2008 such as Medicinal Plants, Strategic LIFE Program, and Egyptian-Italian Cooperation (capacity support, Wadi al-Rayan, Mount Elba, New Valley, BioMAP and Ras Moahmed Environmental Management Sustainable Development).
 - **Third:** new approved projects that have already started such Biosafety National Framework Establishment Support.
 - **Fourth:** prepared projects underway funding during 2007-2008 such as financial GEF Natural Protectorate Financial Sustainability.



Picture (7-10) Some technical cooperation project sites under nature conservation

2. Such projects have contributed to developing and managing natural protectorates and assessing biodiversity in Egypt; for instance, the BioMAP project developed a biodiversity database including more than 600,000 records of Egyptian flora and fauna. Furthermore, they have helped establish a biodiversity website, information center and forum; evaluating and monitoring biodiversity in 4 protectorates; raising environmental awareness by publishing a book on climate changes and biodiversity, besides books and animated cartoons for children, as well as developing a study on a natural history museum in Egypt.

3. Developing a study for classifying habitats in concluding with 14 habitats, each of which shelters a set of specific species. Environmental habitats range from highly dry in the Western Desert to the fertile Nile Valley, and from South Sinai heights to the rich Red Sea coral reefs, in addition to microhabitats which develop their own specific species, particularly plants.



Picture (7-11) Bedouin locations in natural protectorates

4. Another study was conducted on local residents in natural protectorates stating various clans and tribes.
5. In 2006/2007, the Wetlands Project helped open Zaraniq protectorate for tourists, where an environmental hotel was established and migrant bird watching programs organized. Wadi al-Hitan infrastructure was finalized as a world heritage area. The project integrated with St. Catherine Protectorate Action Plan to improve follow-up and monitoring systems, conduct new studies to assess environmental threats on natural plants, conduct field studies of targeted species and status evaluation, incept a strategy for medicinal plant conservation and sustainable use, draft IPR legislation, follow modern conservation systems in-situ via a network of protection systems, provide job and investment opportunities in medicinal plants, in addition to continuing the establishment of a herbarium for medicinal plants, medicinal plants reproduction program, retrieval of some threatened species, and meadow management program.
6. Through South Sinai Regional Development Program, many activities supporting economic, social, environmental and cultural South Sinai heritage were implemented, focusing on sustainable tourism development, protection of natural wealth and supporting local communities. South Sinai natural protectorates were supported by equipment, boats and devices costing € 5.1 m.

7. Strategic LIFE Program: the infrastructure is currently under progress in Wadi al-Gemal protectorate through establishing an administrative premises for the protectorate, supporting it with devices and vehicles, maintaining boats, developing red sea buoy network, providing technical support and capacity building, monitoring and information, environmental awareness and developing local community.
8. Conducting a socioeconomic study on local residents of mangrove areas in Nabq and Wadi al-Gemal protectorates on population, age groups, gender, educational level, housing, economic activities (hunting, tourism, pasture and handicrafts), besides a new activity south Red Sea: introduction of bee honey cells in mangrove areas, an experience that proved successful, and honey production was 8 kg/cell in two months. Honey activity has been gradually expanded and is currently assessed comprehensively. Furthermore, 50 feddans of mangrove were cultivated in the Red Sea and Gulf of Aqaba.

