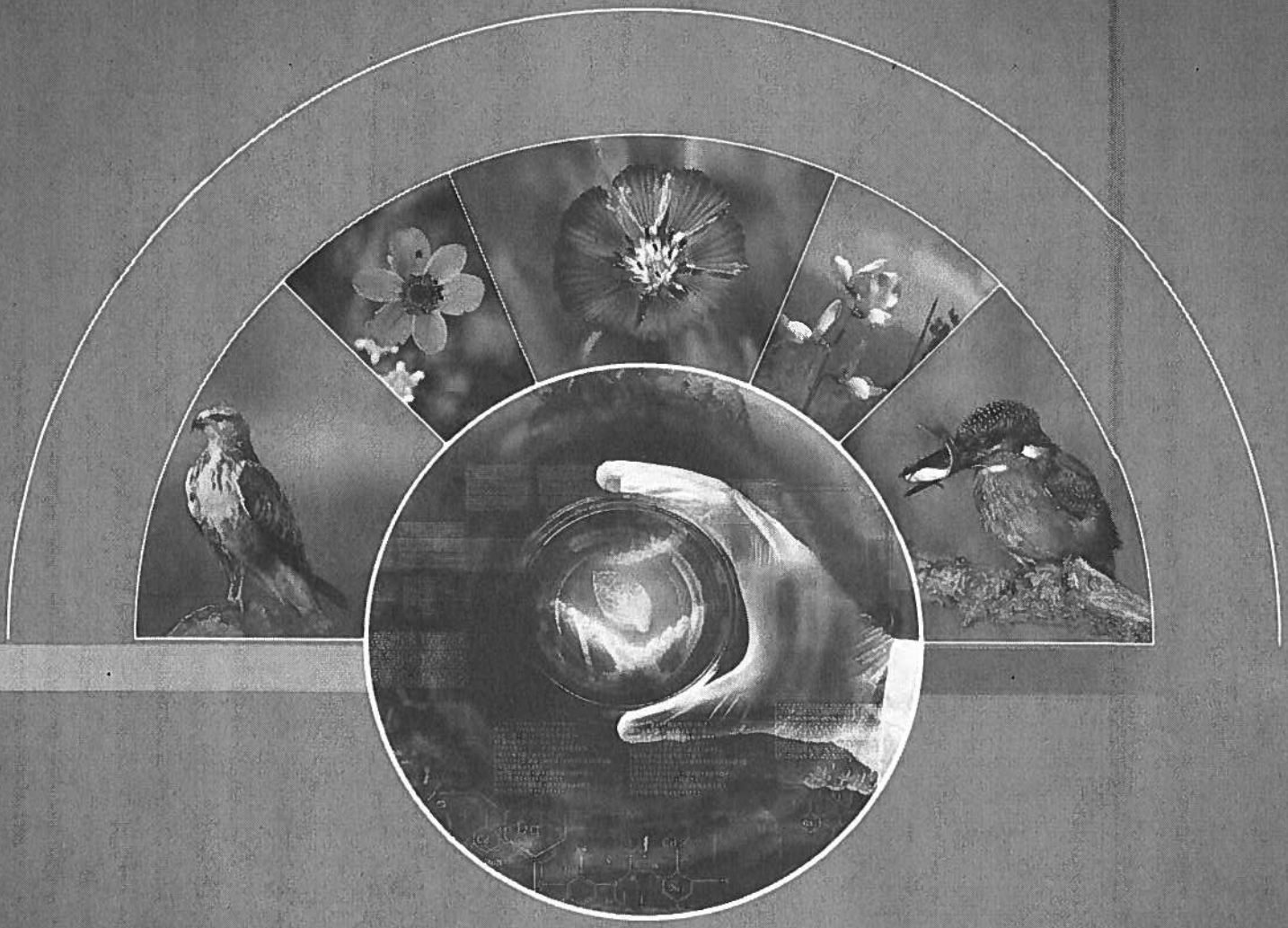
REPUBLIC OF TURKEY
MINISTRY OF AGRICULTURE AND FORESTRY
GENERAL DIRECTORATE OF
NATURE CONSERVATION AND NATIONAL PARKS



NATIONAL BIODIVERSITY ACTION PLAN

2018-2028

NBSAP Addendum Action Plan

REPUBLIC OF TURKEY
MINISTRY OF AGRICULTURE AND FORESTRY
General Directorate of
Nature Conservation and National Parks

NATIONAL BIODIVERSITY ACTION PLAN 2018-2028

Ankara 2019

Anemone corinaria

Preface

Turkey, being located in crossings between Europe, Asia and African continents, having three sides surrounded by seas of different ecological characters, 5,000 meters exceeding height differences starting from the sea level, climatic diversity, possessing two of the most important bird migration routes; has a wealth of biodiversity that cannot be compared to its neighbours. Turkey, having a high rate of endemism of flora is also very rich in medicinal and aromatic plants. Turkey is also gene center of numerious plant species. By reason of Turkey's location is in crossing point of two important gene centers; Mediterranean and the Near East.

In the last 10 years, Turkey gave weight to the conservation of nature and biodiversity at least as much as development. In this respect, Turkey's protected areas scaled up parallel to the Gross Annual Product growth figures increase.

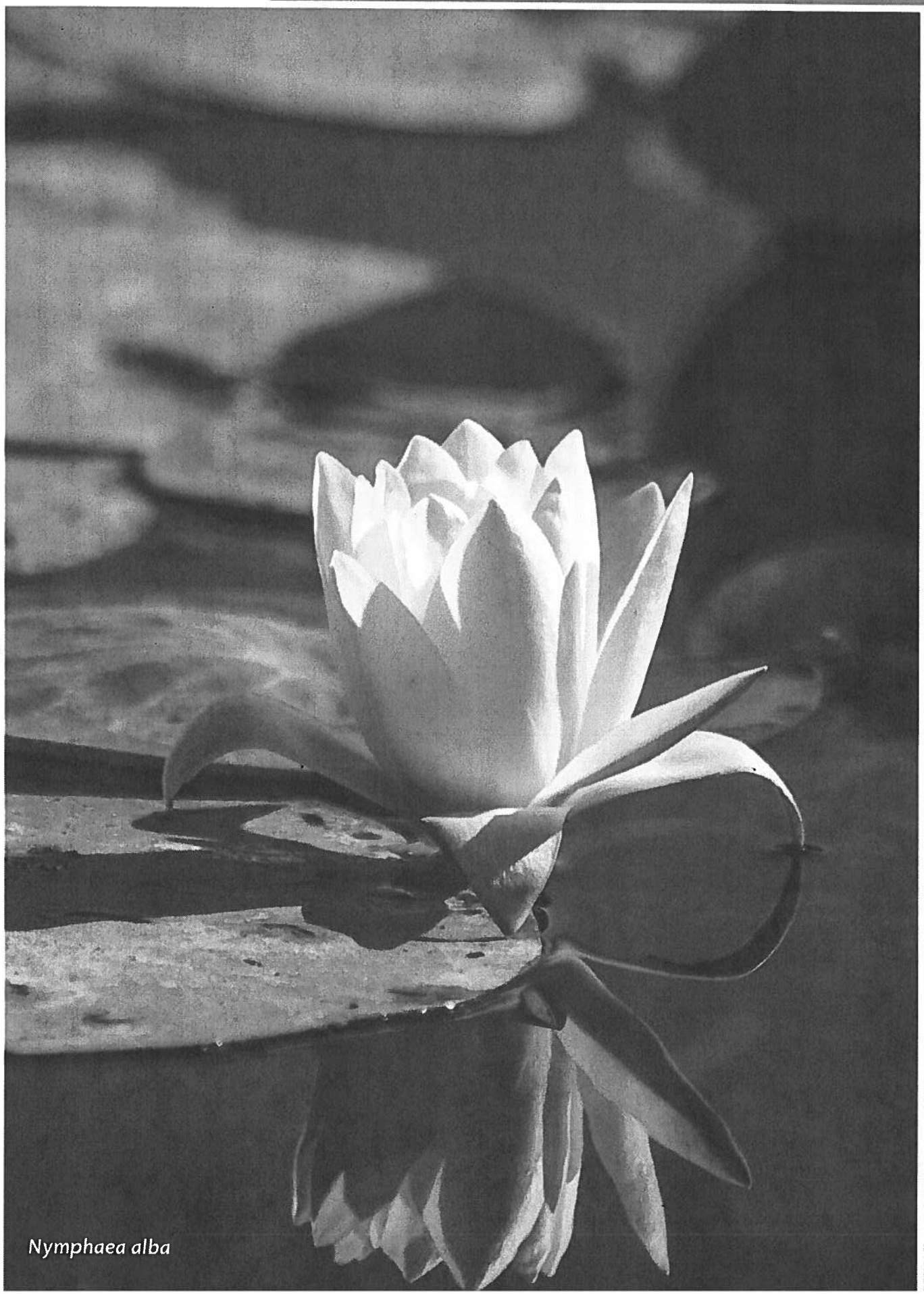
The perception of pressures and threats on biodiversity as an environmental problem was accepted in 1992 with the signing of the Convention on Biological Diversity in Rio de Janeiro's Sustainable Development Conference. Thus, the Convention on Biological Diversity was raised in the international arena, countries have become parties to this agreement and the existence of an international concern on this issue has been formally put forward.

It is important to ensure protection and sustainable use of our biological diversity being aware of new and emerging Technologies. Main objectives of the Convention on Biological Diversity; "conservation of biological diversity", "sustainable use of biological diversity" and "fair and equitable sharing of the benefits arising out of the utilization of genetic resources" and at the same time human, animal and plant health protection and food safety and particularly regarding Turkey's own requirements; National Biological Diversity Action Plan (NBAP) 2018-2028 is prepared.

Through the implementation of National Biodiversity Action Plan, it is aimed to reduce pressures and threats on biodiversity and ecosystems, to develop species specific and ecosystem based conservation approaches, to maintain healthy ecosystems, to develop high value-added products in line with the principle of conservation and sustainable use of biodiversity with a strong economy vision and to regulate access to genetic resources. In order to achieve all these objectives, cooperation and coordination at the national level is required.

I hope the National Biological Diversity Action Plan prepared for the next 10 years to be beneficial for Turkey.

Bekir PAKDEMİRLİ
Minister



Nymphaea alba

Foreword

Turkey signed the United Nations Biodiversity Convention in 1992 and ratified it through Law No. 4177 dated 29 August 1996. The Convention obliges the states to protect the biodiversity in their sovereignty and have the right to define the conditions of access to genetic resources. Conservation of biodiversity requiring a long term for existence in a natural balance is an explicit requirement for the states.

Since the signatory countries are obliged to prepare and update National biodiversity Strategy and Action Plan (NBSAP) in accordance with Article 6 of UN Convention on Biodiversity, to which Turkey is party, the NBSAP of Turkey was revised latest in 2006-2007 with the study carried out with the participation of the related parties and was printed in 2008 with the Ministerial consent.

2011-2020 Biodiversity Strategic Plan and Aichi Biodiversity Targets were approved through Decision No. X/2 in the 10th Parties Meeting (COP-10) of Convention on Biodiversity in October 2010, and the signatory countries were requested to review and update their strategies and action plans and defined their regional targets accordingly.

In this direction, the studies to review and update NBSAP of 2007-2017 started under the coordination of General Directorate of Nature Conservation and National Parks of Ministry of Agriculture and Forestry to fulfil this obligation. Specialized Committee Meetings and workshops with the participation of various institutions/organizations were held in the process, and the implementation progress of 2007-2017 NBSAP was assessed and the compliance of the Strategy with Aichi biodiversity targets was reviewed. In consequence of these studies it was recognized that the 2007-2017 NBSAP strategies and objectives were up to date. Additionally, upon definition of new national objectives and actions complementary to the NBSAP and in line with the Aichi targets, National Biodiversity Action Plan (NBAP), covering the period of 2018-2028 has been prepared. Within the next 10 years, our country will continue the studies in accordance with the objectives in NBSAP (2007-2017) and NBAP (2018-2028) prepared for the conservation and sustainable use of Turkey's biological resources, fair and equal share of benefits arising from the use of genetic sources.

I would like to express my appreciation to all the personnel of the General Directorate and all the participants contributing to the preparation of National Biodiversity Action Plan (2018-2028).

Yusuf KANDAZOĞLU
General Director

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Table List

List of Shapes

Abbreviations

AFAD	Disaster and Emergency Management Presidency
CBD	Convention on Biological Diversity
CITES	Convention on the Int. Trade in Endangered Species of Wild Flora and Fauna
COP	Conference of Parties
DSI	General Directorate of State Hydraulic Works
EIA	Environmental Impact Assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GMO	Genetically Modified Organism
GSP	Global Soil Partnership
IPBES	Intergovernmental science-policy Platform on Biodiversity & Ecosystem
KAMAG	Public Research Support Group
MoEU	Ministry of Environment and Urbanization
MoAF	Ministry of Agriculture and Forestry
NBAP	National Biodiversity Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCNP	General Directorate of Nature Conservation and National Parks
NGO	Non-governmental Organization
R&D	Research and Development
SDGs	Sustainable Development Goals
TAGEM	General Directorate of Agricultural Researches and Policies
TUBITAK	Scientific and Technological Research Council of Turkey
TUBITAK-MRC	TUBITAK Marmara Research Centre
UBENİS	National Biodiversity Inventory and Monitoring System
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

Ministry Revisions

The ames Presidential Decree on the Presidential Organization ames published in the Official Gazette dated July 10, 2018 and numbered 30474 revised the structures of the Ministry.

Ministry of Forestry and Water Management,
Ministry of Agriculture and Forestry;

Ministry of Science, Industry and Technology,
Ministry of Industry and Technology;

Ministry of Customs and Trade,
Ministry of Commerce;

Maritime transport and Communications Ministry,
As the Ministry of Transport and Infrastructure;

The Ministry of Finance,
As the Ministry of Treasury and Finance;

Ministry of Development,
Presidency Strategy and Budget Presidency has been restructured.

INTRODUCTION

In compliance with Article 6 of UN Convention on Biodiversity that we are party to, the signatory countries are obliged to prepare and update National Biodiversity Strategy and Action Plan (NBSAP). NBSAP defines the limits of the international commitments of the Signatory States within the scope of the Convention in terms of reflecting the priorities of countries regarding the realization of decisions taken under the Convention on Biological Diversity. NBSAP of our country was revised latest in 2006-2007 as a result of the study carried out with the participation of relevant groups and was published in 2008 upon the consent of Minister.

2020 Aichi Biodiversity targets were accepted in the 10th meeting of the Conference of the Parties of Convention on Biological Diversity held in 2010 and it was decided that all parties shall review, update, and revise their NBSAPs until 2014 (Decision 10/2 of Conference of the Parties - COP X/2). In this direction, studies were started in General Directorate of Nature Conservation and Natural Parks and later meetings were held with the participation of representatives from General Directorate of Forestry, General Directorate of Water Management, General Directorate of Combating Desertification and Erosion under the Ministry in order to assess the current situation.

Within this framework, a meeting was organized on 29/12/2014 in Undersecretariat in order to review the NBSAP document in consideration of national and international developments since 2007 up to date and the establishment of National Biodiversity Strategy Specialist Committee was agreed upon at the end of the meeting. The mentioned committee studies have been carried out by General Directorate of Natura Conservation and National Parks.

NBSAPs of various countries (EU, Germany, England, India, France, Czech Republic, Moldovia, the Netherlands etc.) were analysed by the Secretariat of National biodiversity Strategy Specialist Committee, and the documents on strategy and vision of institutions in our country (TUBITAK 2023 Objectives, Industry Strategy etc.), 10th Development Plan of Turkey (2014-2018), CBD Global Biodiversity and Environmental Status Reports, CBD Meeting decisions, Council Decisions and Strategic Plan of our Ministry have been examined and all these information were discussed in meetings and workshops.

Aegypius monachus

National Biodiversity Strategy Specialist Committee had in total 8 working meetings between 26.02.2015 and 20.10.2016 and 2 of those were large scale workshops with the participation of stakeholder institution.

The first workshop of National Biodiversity Strategy Specialist Committee was held on 26.05.2015 with the participation of the relevant institutions and organizations, relevant units of the Ministry and members of the specialist committee. The meeting was organized with the attendance of Former Prime Ministry AFAD, Ministry of Environment and Urbanization, Former Ministry of Agriculture, Food and Livestock, Ministry of Foreign Affairs, Ministry of Economy, Former Ministry of Customs and Trade, TÜBİTAK, Turkish Patent Institute, Ministry of Energy and Natural Resources, Ministry of Culture and Tourism, Former Ministry of Transport, Maritime Affairs and Communications, Former Ministry of Development and General Directorate of State Hydraulic Affairs, General Directorate of Forestry, General Directorate of Water Management, General Directorate of Combating Desertification, Legal Consultancy Department, EU and Foreign Affairs Department of The Ministry of Agriculture and Forestry. The actuality of NBSAP 2007, projects and activities performed by relevant institutions/units after NBSAP and the compliance of NBSAP to 2020 Aichi targets were assessed in the meeting. At the end of the meeting it was recognized that the NBSAP (2007-2017) was in compliance with Aichi targets and remained up to date.

Upon meetings and studies, a ***"Draft Action Plan"*** which was prepared by the "National Biodiversity Strategy Specialist Committee" consist of in total 7 Objectives and 24 Actions.

NBSAP revision training was held in our Ministry on 14 November 2016 through online seminar by UN Biodiversity Convention Secretariat (UN CBD). The training took place with the participation of General Directorate of Agricultural Research and Policy / General Directorate of Fisheries and Aquaculture of Former Ministry of Agriculture, Food and Livestock, Former Ministry of Customs and Trade, experts from General Directorate of Combating Deforestation and General Directorate of Nature Conservation and National Parks from our Ministry and NBSAP Specialist Committee members. Important issues to be considered in the updating process of NBSAP discussed in the training. First the UN Biodiversity Convention Secretariat made a presentation in the training, and various questions were asked to UN Biodiversity Convention Secretariat regarding the problems in the revision process by the members of specialist committee.

Pursuant to this, the II. Workshop on Revision of National Biodiversity Strategy was organized on 15 November 2016. The meeting was attended by the relevant general directorates of Ministry of Foreign Affairs, Ministry of Environment and Urbanization, Former Ministry of Food, Agriculture and Livestock, Ministry of Culture and Tourism, and Former Ministry of Customs and Trade as well as the General Directorate of Forestry, General Directorate of State Hydraulic Affairs, General Directorate of Water Management, General Directorate of Combating Deforestation, Department of Strategy, Legal Consultancy Department, Department of European Union and Foreign Affairs of our Ministry and members of Specialist Committee.

Draft action plan broached to the institutions in the workshop held on 14-15 November 2016 in our Ministry was accepted largely by the institutions, and only the action plan was increased from 5 years to 10 years and it was restructured as 2018-2028 targets. Each objective and action were revised one by one and studies carried out by the institutions were recorded in the workshop. It was also recognized that the newly defined objectives completely complied with the projects of institutions and the ***"National Biodiversity Action Plan (2018-2028)"*** received its final form following the necessary amendments.

SOURCES USED IN THE REVISION PROCESS

NBSAP 2007-2017	2011-2020 BIODIVERSITY STRATEGY PLAN (AICHI TARGETS)	-EU DIRECTIVES -MILLENIUM DEVELOPMENT GOALS -UN SUSTAINABLE DEVELOPMENT GOALS -RIO +20 RESOLUTIONS -INTERNATIONAL CONVENTIONS TURKEY IS PARTY TO (RAMSAR, BERN, etc.), NBSAPs OF VARIOUS COUNTRIES, CBD GLOBAL BIODIVERSITY AND ENVIRONMENTAL STATUS REPORTS	-10th DEVELOPMENT PLAN - STRATEGY AND VISION DOCUMENTS OF RELEVANT INSTITUTIONS -DECISIONS OF 1st FORESTRY AND WATER COUNCIL -DECISIONS OF 2nd FORESTRY AND WATER COUNCIL -DECISIONS OF SPECIALIZED COMMITTEE OF MINISTRY OF FORESTRY AND WATER AFFAIRS -STRATEGY DOCUMENT OF FORESTRY AND WATER AFFAIRS	FINAL NBAP

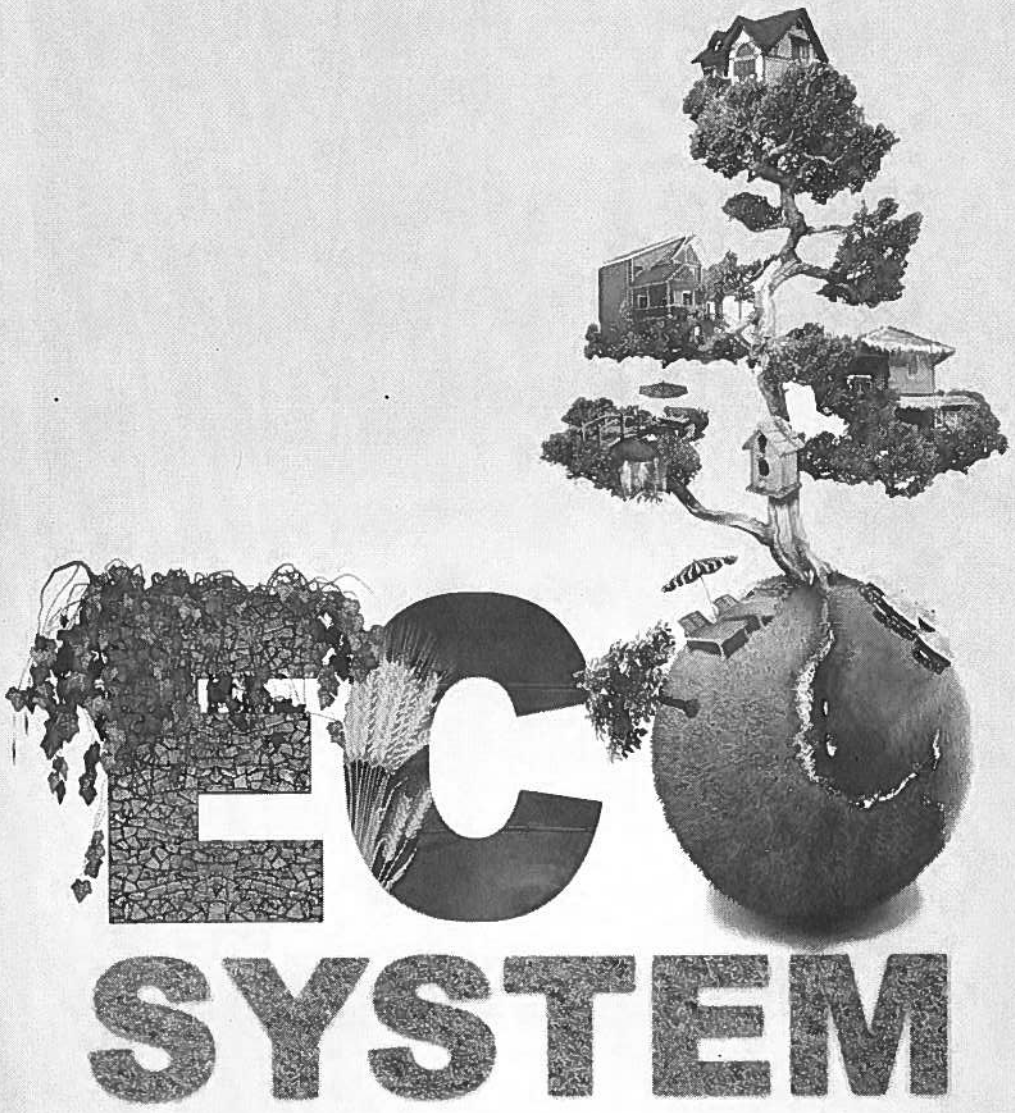
NBAP 2018-2028

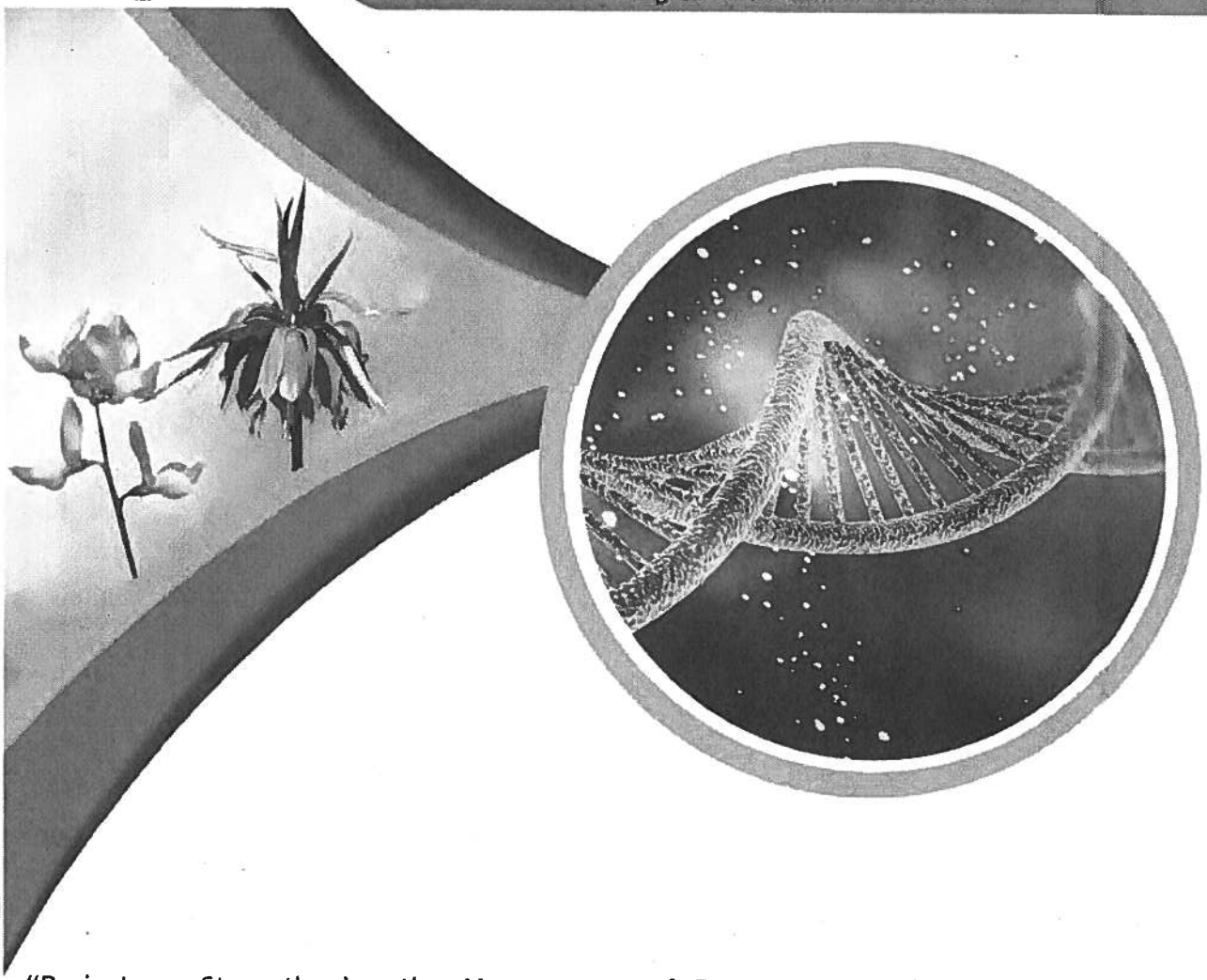
7 NATIONAL OBJECTIVES & 24 ACTIONS

Figure 1. Revision Process

IMPLEMENTATION STATUS OF BIODIVERSITY STRATEGY AND ACTION PLAN (2007 – 2017)

Assessment of the implementation status of objectives in NBSAP covering the years between 2007 – 2017 indicates that the projects carried out in Turkey in accordance with these objectives are performed by universities, public institutions, institutes, agencies, and NGOs. Many projects and studies (trainings, seminars, meetings, children plays, radio programmes etc.) on the conservation and sustainable use of biodiversity and activities are held to raise awareness of the public. "National Biodiversity Inventory and Monitoring Project", "Fighting Biopiracy Project", "Pilot Project on Recording the National Traditional Knowledge Based on Biodiversity", "GEF VI Project on Assessment of Invasive Alien Species in Important Marine Biodiversity Areas", "Project on Protection and Sustainable Management of Steppe Ecosystems of Turkey", "Pilot Implementation Project on Valuation of Ecosystem Services in Sultan Marshes National Park",





"Project on Strengthening the Management of Forest Protected Areas", "Project on Conservation and Sustainable Development of Biodiversity and Natural Sources in Yıldız Mountains", "Project on Research, Protection and Management of Big Mammals for the Protection of National Biodiversity and Gene Sources (KAMAG 1007)", EU funded "Project on Strengthening the National Nature Conservation System for the Implementation of Natura 2000 Requirements", are exemplary projects and studies such as biodiversity researches in wetlands and species action plans have been completed or are on-going under the coordination of General Directorate of Nature Conservation and National Parks and they have been performed or continue to be performed in cooperation with many institutions, institutes, universities and NGOs. On the other hand countless researches and development projects continue to be carried out by General Directorate of Forestry, General Directorate of Water Management, General Directorate of Combatting Deforestation, General Directorate of State Hydraulic Affairs that are dependent to our Ministry, which works directly with biodiversity in Turkey, and Former Ministry of Food, Agriculture and Livestock, Ministry of Environment and Urbanization and TUBITAK as well as universities, research institutes and private sector.

Besides the legislation regulations for different aspects as protected areas, conservation and sustainable use and taking abroad of biodiversity and genetic resources, the studies concerning the entering into force of Law on Conservation of Nature and Biodiversity also continue. One of the important developments in this regard is the entrance into force of Law No. 5977 on Biosafety on 18.03.2010. With this regulation, the principles and procedures related to the status of genetically modified organisms and products have been defined in Turkey.

In the 10th Conference of Parties of UN Convention on Biodiversity (CBD) held in Nagoya, Japan in October 2010, it was decided that the years between 2011-2020 shall be declared as Ten years of International Biodiversity and 2011-2020 Ten years of Biodiversity was declared by the General Board of United Nations. In the 10th Conference of Parties of the Convention, Biodiversity Strategic Plan and 2020 Biodiversity Targets, briefly called Aichi Targets were accepted with the main aim to halt the loss of biodiversity in the world until 2020.

2020 Biodiversity Targets (Aichi Biodiversity Targets) consists of 5 strategic goals and 20 targets. Goals and targets establish the bigger goals desired to be achieved globally and a flexible framework for determination of targets in national or regional levels. Signatory countries are obliged to define their own objectives in order to achieve the global targets, considering their national priorities.

For this purpose, harmonization studies between the objectives in 2007-2017 NBSAP and Aichi Targets have been conducted in Turkey (Chart 1). As a result of the studies carried out, it was recognized that the NBSAP 2007-2017 was in compliance with the Aichi targets and it was up to date; and updating studies were conducted by General Directorate of Nature Conservation and National Parks, considering the Biodiversity Convention 10th Conference of Parties decision (COP X/2), current status of NBSAP (2007-2017), developments in national and international spheres and NBAP (2018-2028) has been created through the preparation of an additional action plan in a participatory process. For the upcoming period, Turkey will continue its studies in line with the objectives stated in NBSAP (2007-2017) and NBAP (2018-2028).

Circaetus gallicus

Table 1.

2011-2020 Biological Diversity Strategic Plan (Aichi Targets)- NBSAP 2007-2017 Comparison Table

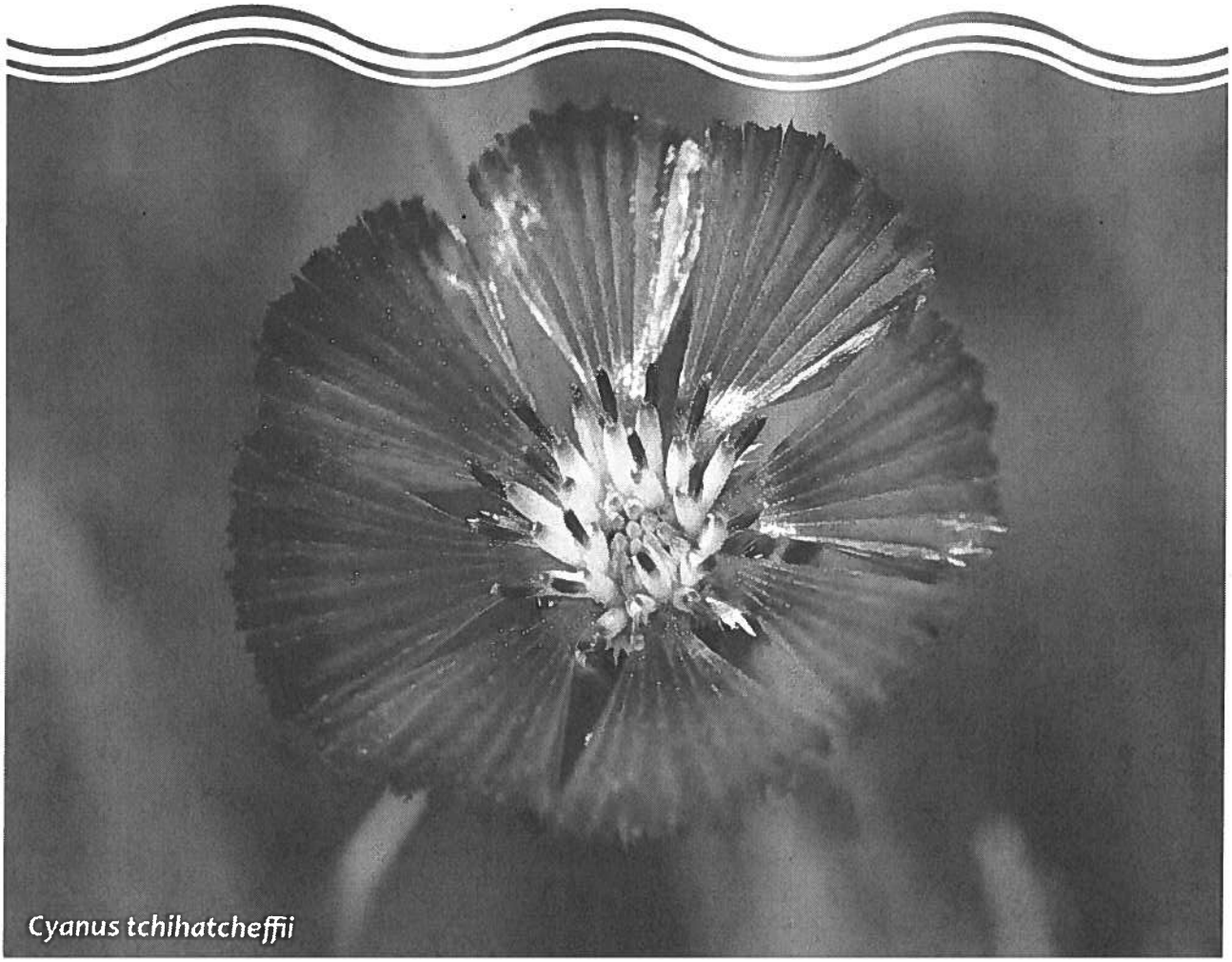
2011-2020 Strategic Plan	NBSAB (2007-2017)
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	**GOAL 2: To use biological diversity components by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account**
Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably	**Objective 2.3** To raise public awareness and sensitivity concerning the conservation and sustainable use of biological diversity. **2.3.1.** The inclusion of the subjects and texts on biological diversity conservation and the sustainable use of biological resources into the national education curricula **2.3.4.** The dissemination of the education materials urging those measures that can be taken to prevent or reduce the adverse impacts on ecosystem and biological resources
Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	**Objective 2.1** To establish harmony among legal, administrative, and institutional regulations and applications having relevance to the conservation of biological diversity and sustainable use of its components. **2.1.1.** The identification of any inharmoniousness between biological diversity related legislation and other regulatory measures to eradicate authority chaos and repetitions and to fill the gaps and taking actions to harmonize them. **2.1.6.** The search, development and use of alternative management tools to urge the integration of the Biological Diversity Strategy and Action Plan with development plans and for the integration of social, cultural, and economic targets with nature conservation targets and for the sustainable and rational use of water resources.

2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 3: *By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.*	**2.1.4.** The development and the implementation of appropriate socio-economic policies and incentives as a way of biological diversity conservation, the sustainable use of biological resources and the development of new sustainable use patterns for biological resources. **4.2.6.** The maintenance, adjustment, and improvement of economic incentives for the sustainable use of biological resources and the conservation of biological diversity. **7.2.2.** The development and implementation of appropriate socio-economic policies and incentives to support sustainable use of mountain ecosystems and of the biological resources of those ecosystems, in particular the high plateaus. **8.1.2.** The determination and implementation of incentives for the establishment and operation of sewer system and wastewater treatment plants in the settlement areas close to the sensitive inland water ecosystems and for the expansion of the irrigation methods which ensure the sustainable use of water resources. **9.1.3.** The determination and the implementation of incentive measures which promote the creation of new income-generating resources for those communities who might be affected from the conservation and sustainable use of coastal and marine biological diversity. **9.3.6.** The promotion of the use of appropriate fishing gears and techniques and the implementation of training programmes which will allow the elimination or lowering to an acceptable level of the adverse impacts of fishery on populations, species, habitats and ecosystems.

Tunca Valley Natural Park

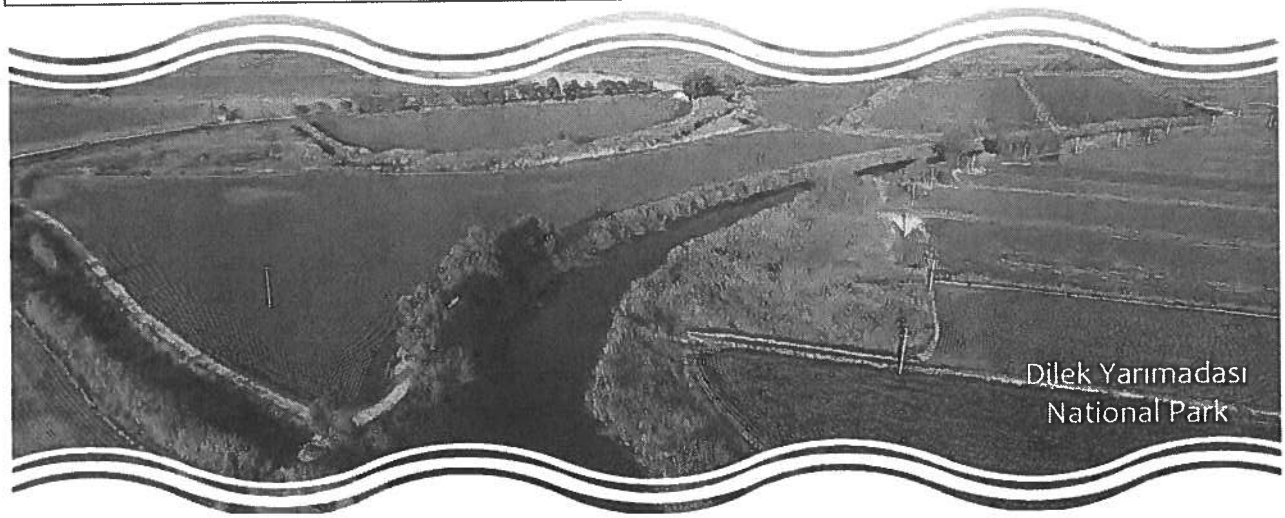
Table 1. 2011-2020 Biological Diversity Strategic Plan (Aichi Targets)- NBSAP 2007-2017 Comparison Table

2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 4: *By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.*	**Objective 1.3** To prevent or minimize as far as possible any pressures on and threats to biological diversity. **Objective 2.2** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. **Under Goals 4-9,** objectives and strategic actions are listed at ecosystem level. **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood.
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use	**GOAL 2: To use biological diversity components in a sustainable manner by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account.**

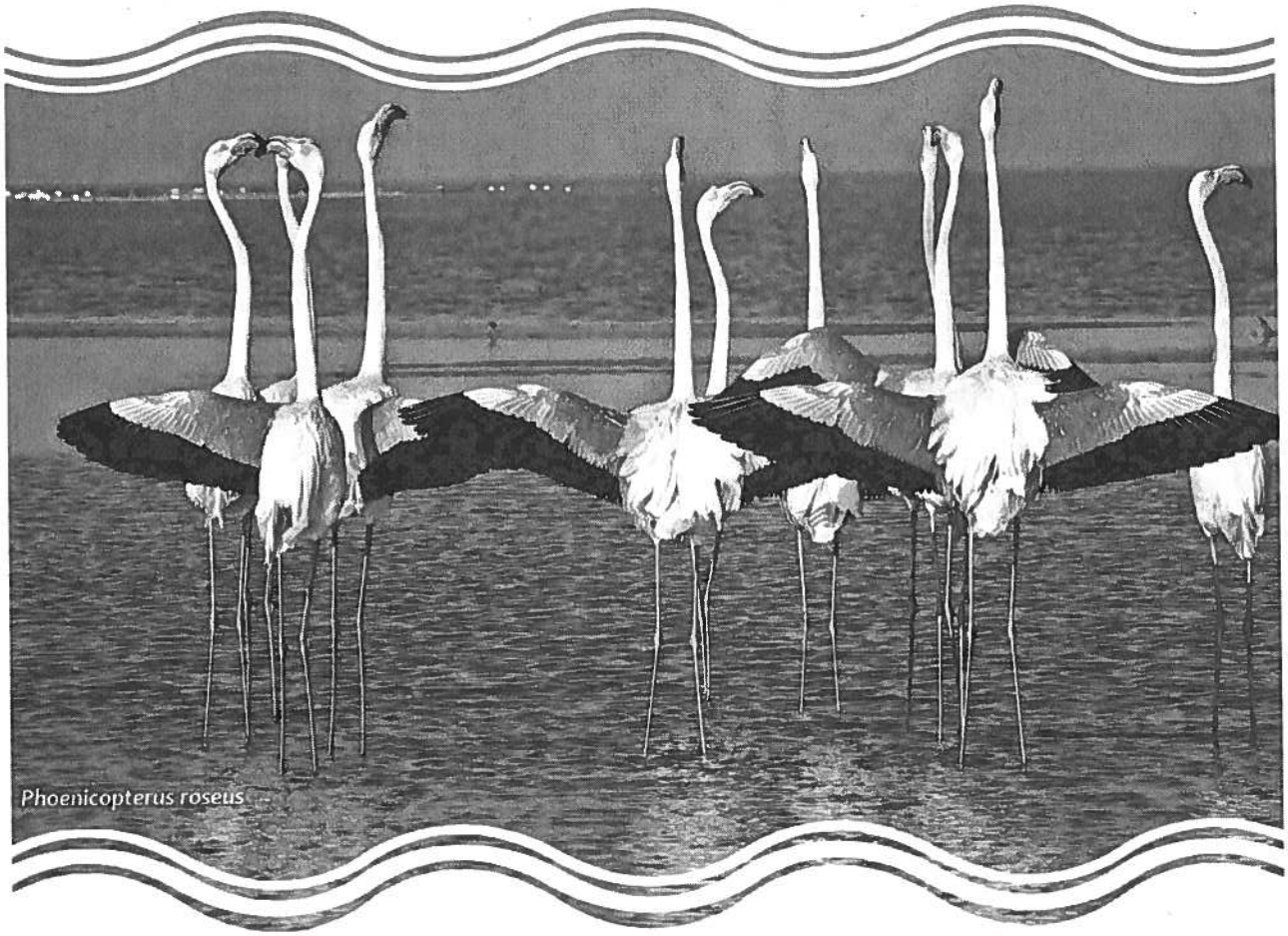


Cyanus tchihatcheffii

2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 5: *By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced*	**Objective 1.3** To prevent or minimize as far as possible any pressures on and threats to biological diversity **Objective 2.1** To establish harmony among legal, administrative and institutional regulations and applications having relevance to the conservation of biological diversity and sustainable use of its components **Objective 2.2** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fi res, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above **Objective 6.2** To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity. **Objective 7.2** To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it **Objective 9.3** To combat against the threats to coastal and marine biological diversity



2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	**Objective 9.3** To combat against the threats to coastal and marine biological diversity **9.3.6.** The promotion of the use of appropriate fishing gears and techniques and the implementation of training programmes which will allow the elimination or lowering to an acceptable level of the adverse impacts of fishery on populations, species, habitats and ecosystems
Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	**Objective 2.2** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above **Objective 6.2** To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it **Objective 9.3** To combat against the threats to coastal and marine biological diversity



2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	**Objective 2.2** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. **2.2.5.** The development of methods for the prevention of the release into the nature of substances which are harmful to ecosystems, species and genetic resources or the release of those substances in amounts harmful to them, and the support of the attempts towards this **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood **4.2.1.** The development of methods and measures for the reduction of the impact of excessive and wrong agricultural inputs on the beneficial populations and for more effective agricultural input use, and the implementation of those methods and measures

2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	**Objective 1.3** To prevent or minimize as far as possible any pressures on and threats to biological diversity. **1.3.4.** Taking appropriate legal and institutional measures, including the improvement of human resources, for the identification of the alien species that are introduces or most probably will be introduced into Turkey, the prevention of the introduction of invasive alien species, the determination of any possible adverse impacts of them on biological diversity and the elimination and control of those impacts. **Objective 4.3** To prevent or minimize as far as possible any pressures on and threats to agricultural biological diversity which come from the genetically modified organisms (GMO's) and the alien species. **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it. **8.2.4.** The identification of the reasons of unintentional introduction of alien species, and the submission of solution proposals. **8.2.5.** Setting up a national database which will help the identification of the introduction of any potential harmful alien species and allow the foreseeing of them in advance and promoting the efforts to allow access to the international databases in order to be able to devise methods for control and prevention. **8.2.6.** The elimination or lowering to an acceptable level of the adverse impacts of alien species introduced by fisheries harvest projects, fish farms, development programmes and the transfer of waters and species between basins. **8.2.7.** The reviewing of laws and regulations concerning the introduction of alien species in ecosystems. **Objective 9.3** To combat against the threats to coastal and marine biological diversity. **9.3.5.** The examination of the impacts of alien species on marine biological diversity and taking measures to prevent any adverse impacts.

Table 1. 2011-2020 Biological Diversity Strategic Plan (Aichi Targets)- NBSAP 2007-2017 Comparison Table

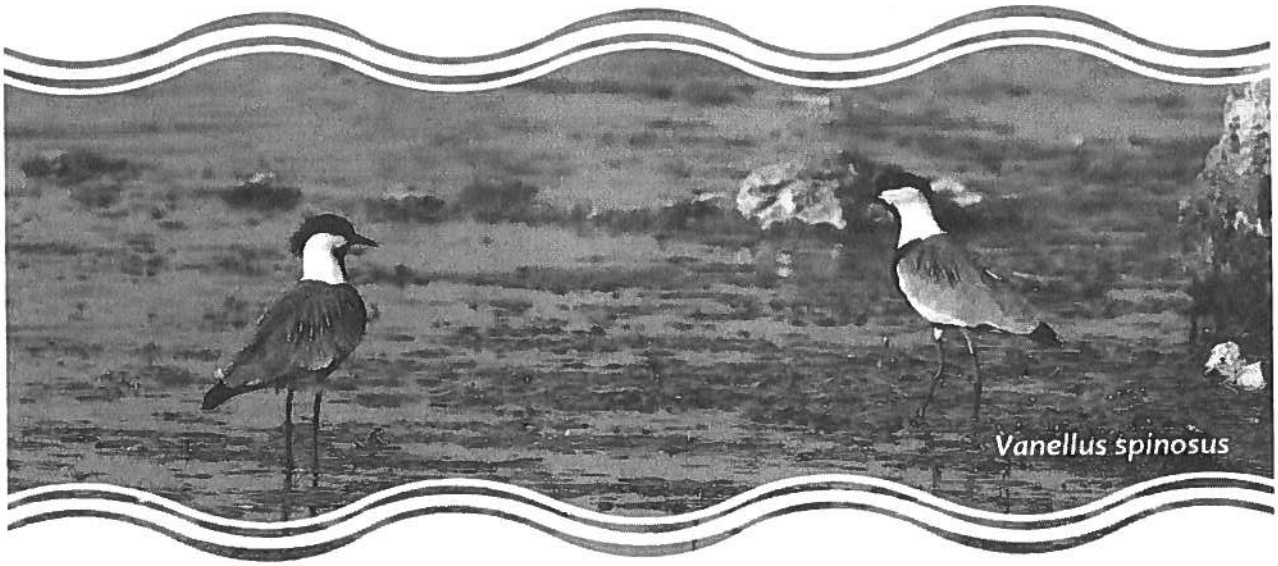
2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	**1.3.7.** The identification of the impacts of climate change on biological diversity, the monitoring of those impacts, and taking measures to protect the most affected ecosystems and species **7.2.1.** The identification of the adverse impacts of the key threats to mountain biological diversity like climate change and the determination of measures either to prevent or to mitigate such impacts. **9.3.3.** The identification and monitoring of the impacts of climate change in Turkey's seas using remote sensing methods.
Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	**GOAL 1: To identify, protect and monitor biological diversity components which have importance for Turkey.**
Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures and integrated into the wider landscapes and seascapes.	**Objective 1.2** To include the less-represented ecosystems, species and genetic diversity centres into protected areas of both terrestrial and aquatic ecosystems, and to achieve an effective protected area management. **Objective 4.1** To identify, protect and monitor the biological diversity elements which have importance for agricultural biological diversity. **Objective 7.2** To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems **Objective 9.2** To fill the information gaps concerning coastal and marine biological diversity, to identify and put under conservation the areas and species which have importance for biological diversity and are under threat, and to develop and implement monitoring programmes.

Ayder Plateau
Rize - Turkey

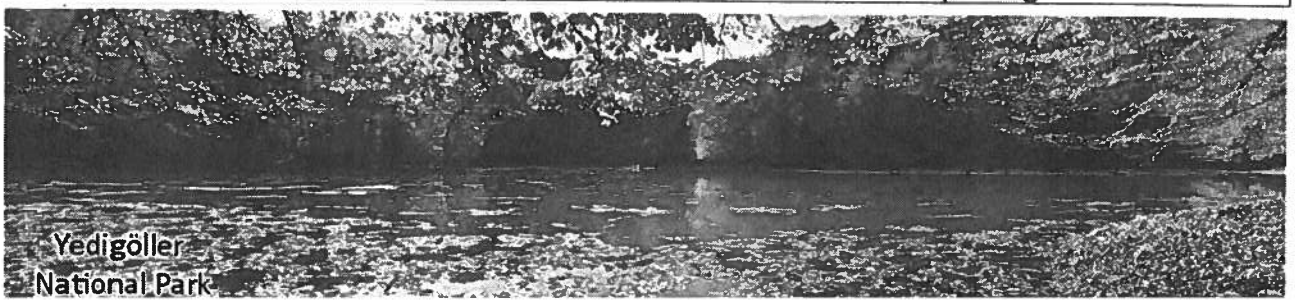
2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	**Objective 1.1** In order to determine and monitor any changes in ecosystems, species and genetic diversity, to develop and implement biological diversity inventory and monitoring methods and programmes, by considering rapid assessment methods and biological diversity indicators, as well. **Objective 1.3** The identification of reliable and economic biological diversity inventory methods and Technologies. **1.3.3.** The development of rehabilitation programmes, techniques and technologies for the species either endangered or under threat, or for the degraded ecosystems, using such objective criteria as the ecological and habitat needs of the species at risk, and the implementation of the above and evaluation of their success. **Objective 4.1** To identify, protect and monitor the biological diversity elements which have importance for agricultural biological diversity. **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above. **Objective 7.1** To effectively implement biological and ecological inventories, monitoring programmes and classification systems. **Objective 9.2** To fill the information gaps concerning coastal and marine biological diversity, to identify and put under conservation the areas and species which have importance for biological diversity and are under threat, and to develop and implement monitoring programmes.

Dilek Yarımadası National Park

2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	**GOAL 3.** To identify, protect and benefit the components of genetic diversity, including the traditional knowledge, which have importance for Turkey. **Objective 3.1** To identify, record, protect and manage the components of genetic diversity which have importance in terms of biological diversity, agriculture, food and economic value. **Objective 4.4** To ensure conservation and sustainable use of genetic resources which have actual and potential values for food and agriculture; and to ensure the fair and equitable sharing of the benefits from the utilization of genetic resources. **Objective 5.3** To establish mechanisms and frameworks in order to support the fair and equitable sharing of the benefits from the utilization of the genetic resources of steppe areas.
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services	**GOAL 2.** To use biological diversity components in a sustainable manner by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account **GOAL 3.** To identify, protect and benefit the components of genetic diversity, including the traditional knowledge, which have importance for Turkey



2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable. ***Target 15:*** By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	**Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood. **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above. **Objective 6.2** To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity. **Objective 7.2** To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems. **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it. **Objective 9.3** To combat against the threats to coastal and marine biological diversity.
Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	**Objective 3.2** To control access to genetic resources and guarantee the sharing of the benefits arising out of the utilization of these resources with Turkey.
Strategic Goal E: *Enhance implementation through participatory planning, knowledge management and capacity building.*	**GOAL 10.** To establish a mechanism for the implementation of the Biological Diversity Strategy and Action Plan and the follow-up of implementation and reporting.



Yedigöller National Park

2011-2020 Strategic Plan	NBSAB (2007-2017)
Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	**GOAL 10.** To establish a mechanism for the implementation of the Biological Diversity Strategy and Action Plan and the follow-up of implementation and reporting.
Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	**Objective 10.1** To establish coordination among the relevant institutions as regards the conservation and sustainable use of biological diversity.
Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	**Objective 10.2** To achieve the integrity and sustainability of financial structure for the identification, conservation and sustainable use of biological diversity.

Ovis gmelinii anatolica Valenciennes

Biological Diversity

Turkey has three biogeographical regions called Euro-Siberia, Mediterranean and Iran-Turan; and the transition zones of these biogeographical regions and it has a location of a bridge between two continents; which therefore has gained the feature of a small continent in terms of biodiversity as a result of changes in climatic and geographical features in short intervals. This extraordinary ecosystem and habitat diversity have brought an important diversity of species along.

Genetic diversity of Turkey gains special importance with its plant genetic sources. Because Turkey is located on the point where the gene centres of Mediterranean and Near-east crosscuts. These two regions are very important in the appearance of wheats and horticultural crops. There are 5 micro-gene centres, where more than 100 species can be found and that are the diversity centres or origins of other plant species important in economic terms such as high number of important cultigens and medicinal plants in Turkey. These centres provide very important gene sources for future sustainability of numerous plant species which are cultivated in the world. In terms of fauna gene sources, it is accepted that plenty of native animal species are grown in Anatolia due to its location and they spread out to the other regions of the world from here. Furthermore, the fact that Turkey is located on two big bird migration routes increases its importance as a breeding and feeding site for birds.

Turkey is quite rich in terms of both fauna and flora as for the zone it is located on. The primary reason of this is; that Anatolia is acts as a bridge between European and Asian continents and therefore it is on the migration route; that it has different climate and ecosystem types; and that it has a rich flora, which makes it possible for many animal species to find a suitable habitat for feeding. All these rich ecological factors are also reflected to the richness of fauna.

Coastal ecosystems, where marine and terrestrial ecosystems overlap, are quite important ecosystems as they are ecotones. Coastal ecosystems make up 4,1% of the terrestrial sources that creates the surface of the country. The difference in the form of foothills of the mountain on the sea and the coastal topography on the coastal regions of our country have created various coastal ecosystems as sand dunes, caves, delta, lagoon, sealer, calcareous terraces that differentiates according to the regions. Among all these coasts, especially the coasts in the Eastern Mediterranean are ecosystems with high flora and fauna diversity. There are thousands of sea caves among the coasts of Turkey, with very different geological structures and hosting many fish species and other sea livings. Some of these caves have been identified as the hosting and breeding site of Mediterranean seal.

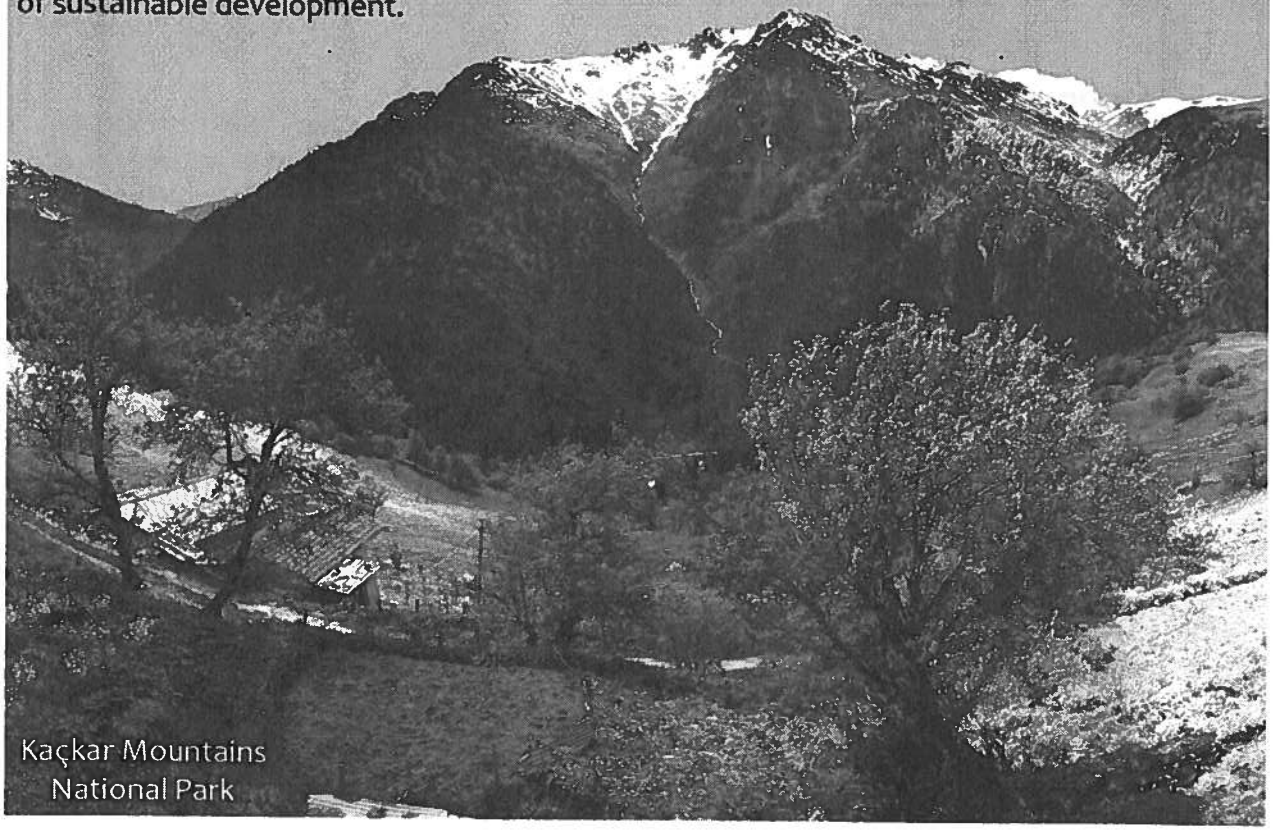
Island biodiversity has a special importance in marine biodiversity. There are around 500 islands and islets in Turkey. A part of the islands has rich biodiversity and endemic species, whereas others are isolated from human disturbances and therefore help protection of both marine and terrestrial biodiversity by providing an environment for breeding and living as well as hosting sea mammals, sea birds and amphibians that are endangered in the world such as Mediterranean seal.

Capra aegagrus

"National Biodiversity Inventory and Monitoring Project" has started in 2013 in order to inventor the biological diversity of Turkey and monitor the species and habitats defining the change in ecosystem dynamics. Within the framework of the National Biodiversity Inventory and Monitoring Project, monitoring studies are conducted to identify the course of biological diversity. Species and special areas defined within the project are reported periodically and so the tracking can be provided by General Directorate of Nature Conservation and National Parks.

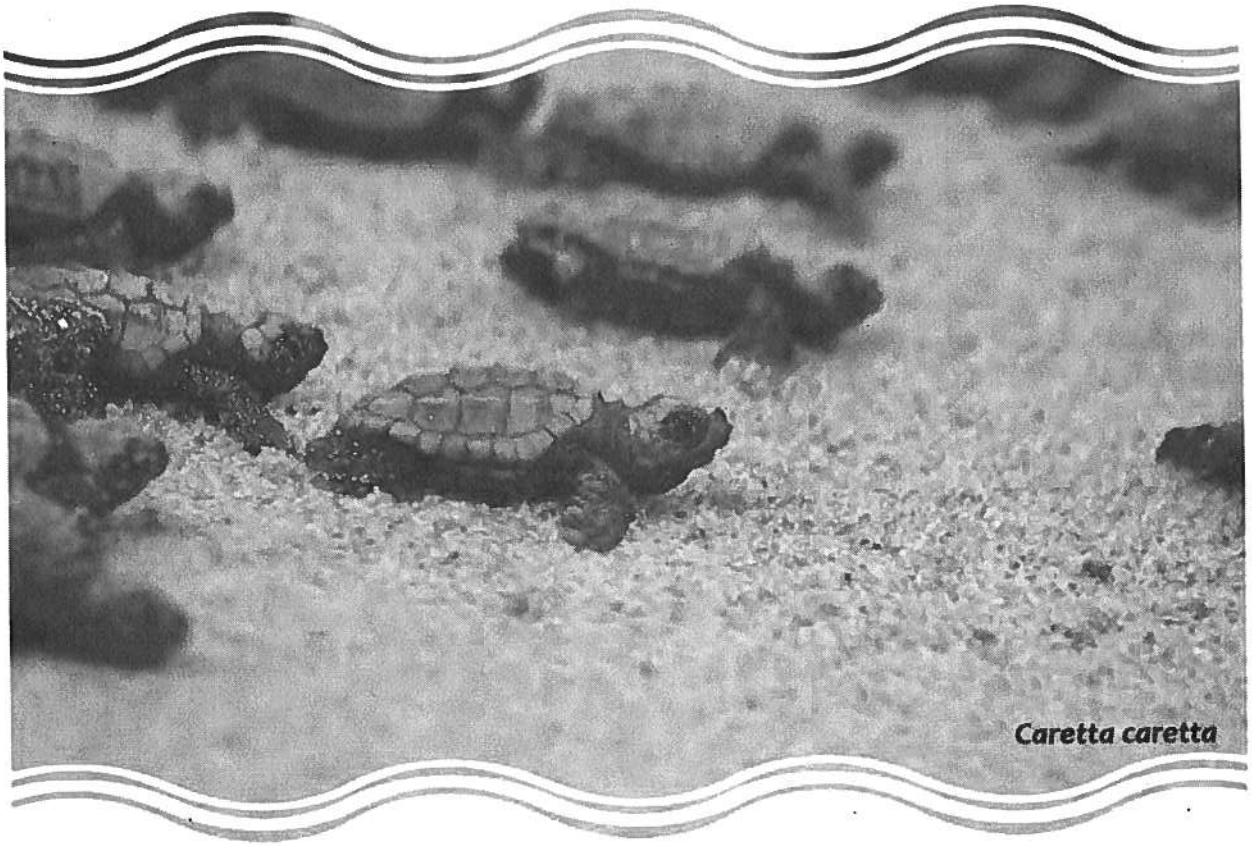
Furthermore, the project aiming to transfer and transport of special plant species to a suitable habitat in cases when they are endangered in their own natural habitats; "Identification of Submerged Plant Species in a shallow lake" was started in 2013. There were also studies to converse the academic studies performed in the field of biological diversity, into an information system under a discipline. The project on "Identification of Submerged Plant Species in a shallow lake" was carried out between 2013-2015. Monitoring studies for the plant species that were produced and transported are ongoing.

In line with the Sustainable Development Objectives in Turkey, primarily Former Ministry of Forestry and Water Affairs, Ministry of Environment and Urbanization, Former Ministry of Food, Agriculture and Livestock, Former Ministry of Science, Industry and Technology, Former Ministry of Finance, Former Ministry of Transport, Maritime Affairs and Communication with different focal points and all ministries are relevant to nature conservation. Former Ministry of Development defines the development policies related to nature conservation and biological diversity in Turkey and ensures the national coordination of sustainable development.



Kaçkar Mountains National Park

Ecosystem services as a whole, falls into the agenda of all institutions related to livings, ecosystems, economics and social policies. Therefore, the basic studies on the subject make it obligatory for all the mentioned ministries to co-work in coordination. For example; in food biological diversity and registration of some of the gene sources TAGEM; in nonhuman biotechnology studies TUBİTAK and TAGEM; and in biotechnology studies on human biomolecules and tissues TUBİTAK and Ministry of Health (Turkish Public Health Institution) comes to front.



Caretta caretta

In regard to the protection of our marine biological diversity, Turkey performs many activities within the framework of Convention on Biodiversity (CBD), Conventions of Bern, Barcelona and Bucharest that it is party to. Studies that aim international cooperation in the field of protected areas on a regional level for the protection of biodiversity in Mediterranean have started within the framework of "Protocol on Special Protection Areas in Mediterranean" that is one of the annexes of "Convention for the protection of the Mediterranean Sea Against Pollution" which was signed on 16.02.1976 in Barcelona and entered into force upon publication in the Official Gazette numbered 17368 on 12.06.1981. Including the marine areas of Special Environment Protection Areas, total surface of protected marine areas of Turkey is 1.444.293. Protected coast length of Turkey is 1865 km.

Moreover;

• The project on "Assessment of Threats of Invasive Alien Species in Important Marine Areas GEF VI" prepared by General Directorate of Nature Conservation and National Parks, Former Ministry of Forestry and Water Affairs, was ratified on 11 March 2016 by GEF Council and is expected to start in the second quarter of 2018 in cooperation with UNDP Turkey.

• Within scope of harmonization and implementation of Water Framework Directive, biologic monitoring studies are performed in various basins in aquatic ecosystems since 2012 by General Directorate of Water Management, Former Ministry of Forestry and Water Affairs. Within the framework of biologic monitoring studies; fish, benthic micro invertebrates, phytoplankton, phytobenthic, macrophyte, macroalgae and angiosperm biologic quality components are monitored in rivers, lakes, coasts and transition waters. Biologic monitoring has been taken into the scope of routine monitoring to be performed by our Ministry, within the scope of Monitoring Programmes prepared by General Directorate of Water Management. Monitoring studies have been started under the Monitoring Programmes by General Directorate of State Hydraulic Works.

• Since 2012, biological monitoring studies have been performed in 10 basins in scope of "Basin Monitoring and Definition of Reference Points Project", in Greater Menderes Basin in scope of "EU Twinning Project on Increasing Capacity on Water Quality Monitoring", in 8 basins in scope of "Establishment of Water Quality Ecologic Assessment System Specific to Our Country Project", in 25 basins in scope of "Project on Identification of Sensitive Areas on Basin Basis and Water Quality Objectives in Turkey", in 3 basins in scope of "EU Project on Transformation of Basin Protection Action Plans to River Basin Management Plans", in Greater Menderes Basin in scope of "Development of the Methodology for Identification of Environmental Objectives for Surface, Coastal and Transitional Waters: Greater Menderes Basin Pilot Study Project".

• In addition to that, biological monitoring studies continue in 25 basins in scope of "Project on Establishment of Reference Monitoring Network in Turkey", in Gediz basin in scope of "Project on Preparation of Gediz Basin Management Plan" and in the lakes located in 11 basins in scope of "Project on Definition of Assimilation Capacity in Still Waters and Improvement of Water Quality."

Sakarya Acarlar
Longos Wetlands

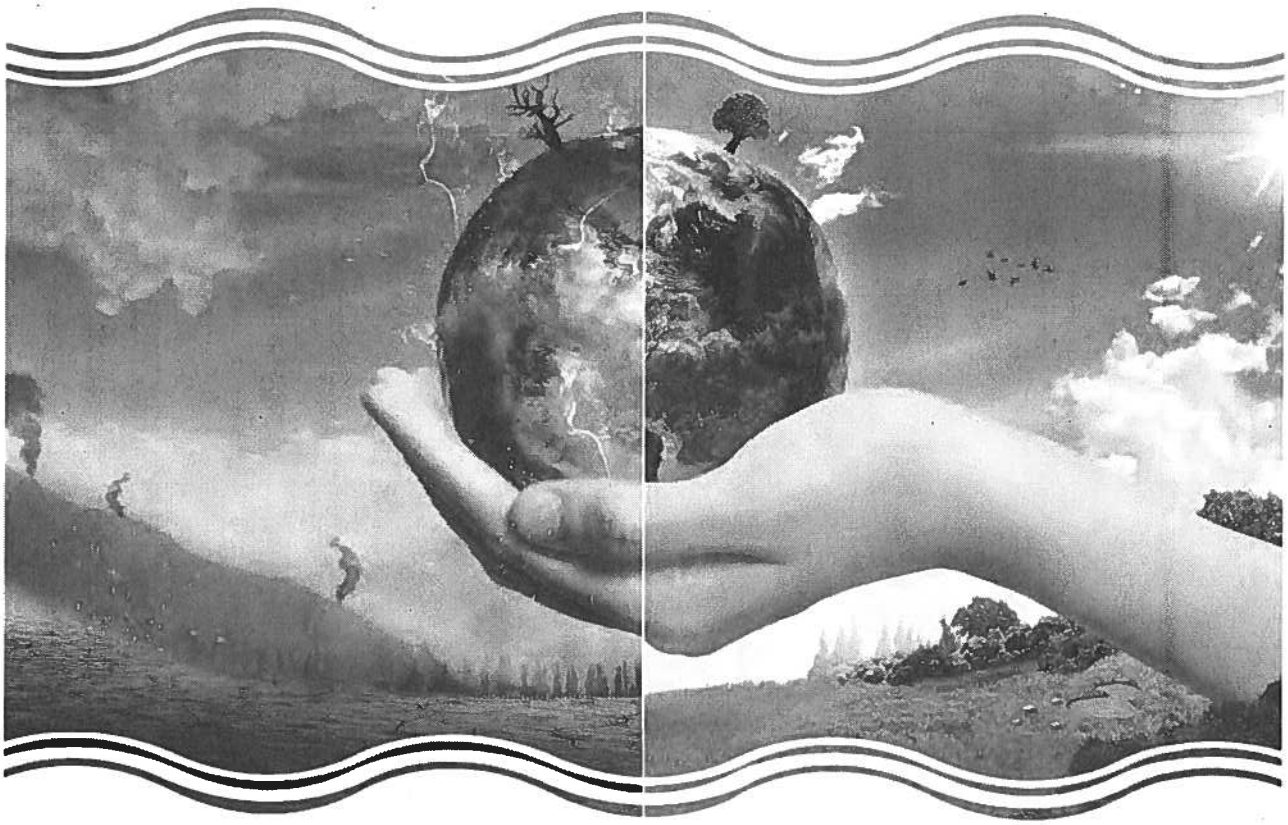
• Furthermore, biological monitoring studies will be conducted in Lesser Menderes Basin in scope of "Project on Preparation of Basin Management Plan of Lesser Menderes Basin", in lakes located in 14 basins in scope of "Project on Improvement of Water Amount and Quality of Ramsar Sites and Priority Wetlands". Important amount of data regarding the aquatic flora and fauna diversity of our country has been collected as a consequence of all these biological monitoring studies. The data on the performed biological monitoring studies is planned to be compiled in National Water Information System.

• 20 marine studies were conducted in all of our seas (in 4 seas one summer, one winter) through "Project on Integrated Pollution Monitoring in Seas" performed by Ministry of Environment and Urbanization, General Directorate of EIA Permit and Inspection and TUBITAK-MRC and multiparameter monitoring (sampling, analysis and assessment) consisting of different monitoring components were performed in 450 stations (314 point based, 136 area based) with the additional stations defined according to needs every year.

• Within the framework of the "Project on Providing Standardization in Marine Monitoring" that was started in 2015 by Ministry of Environment and Urbanization, General Directorate of EIA Permit and Inspection, 10 guidelines were created and among those, the ones on Sea Mammals and Assessment Guidelines, Benthos Guidelines, Macro Algae-Seagrass Guidelines, Eutrophication Guidelines and Plankton Guidelines were prepared by TUBITAK-MRC regarding the marine biodiversity.

• The project on "Quality Assessment and Classification of Coastal Waters (DEKOS)" was conducted between 2011-2013 by TUBITAK-MRC, to which General Directorate of Environment Management- Ministry of Environment and Urbanization was beneficiary. Through this project, following operations were conducted: classification of coastal and transitional waters in accordance with EU Water Framework Directive, creation of pollution maps, determination of objectives and discharge criteria that would allow environment/receiving environment to reach the best ecological conditions, definition of the best environmental condition for marine waters, and the objectives for this purpose to be defined according to EU Marine Strategy Directive (MSD) and the establishment of necessary indicators (pressure-status-impact-measure).

• The project on "Capacity Building on Marine Strategy Framework in Turkey (MARinTURK)" started in 2016 by General Directorate of Environmental Management – Ministry of Environment and Urbanization and it is aimed to improve required technical and administrative capacity for transposition and implementation of Marine Strategy Framework Directive (2008/56/EC); to conduct gap analysis and setting recommendation to ensure coordination between related institutions, activities, legislations and projects; and to develop methodology for the implementation of the Directive and to apply thereof in selected regions (Turkish national waters in Black Sea and Turkish national waters from Fethiye-Muğla to Hatay). Furthermore, within the scope of the project, Initial Assessment, Good Environmental State, Objectives and Measures Programme and Monitoring studies, which includes Analysis of Current Status related to Biological Diversity that is one of the 11 indicators of MSFD are also conducted.



Furthermore, within the framework of international conventions, in 1998 Turkey became party to the United Nations Convention to Combat Desertification (UNCDD), the implementation of which started in 1996 by United Nations with the aim to restore and prevent desertification and land degradation especially in arid, semi-arid and semi-wet ecosystems, and develop global cooperation to mitigate the impacts of drought in the affected areas. 195 Signatory Countries to the Convention work in collaboration with the aim to improve the living conditions of the public living in arid areas, to maintain and improve the biodiversity and ecosystem functions in these fragile areas and to mitigate the effects of drought. On the other hand, due to the fact that land, climate and biodiversity dynamics are in close relation in an ecosystem approach, this Convention is also in close cooperation with other Rio Conventions; Convention on Biodiversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Apart of that, the United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an independent intergovernmental institution founded in 2012 to provide aid for policy making for the protection of biodiversity, ecosystems and services for humankind. Additionally, the United Nations Food and Agriculture Organization (FAO) Global Soil Partnership (GSP) was founded in 2012 with the membership of signatory countries to contribute to the protection and sustainable use of soil for provision of food security at a global level. The purpose of the incentive is to support the basic ecosystem services, as well as developing soil resources for the protection of limited healthy and productive soil resources of the world for the for a food secure world.

Objectives of the abovementioned three big conventions (UNCCD, UNFCC and CBD) and related science-policy programmes (IPBES and GSP) are compliant with Sustainable Development Goals (SDGs) defined for the year 2030. In the United Nations General Assembly Sustainable Development Summit held on 25-27 September 2015, 17 main goals were agreed by 193 Member States, including Turkey, to eliminate poverty and ensure the common prosperity of humankind within the next 15 years.

Second of the development goals, which focus on eliminating hunger, achieving food security and promoting sustainable agriculture, aims to contribute to the sustainability of ecosystem services, strengthening adaptation to extreme weather events as climate change, drought, floods and increasingly improve the land and soil quality that are the main components of food provision, through ensuring powerful agricultural practices increasing production and productivity and sustainable food production systems by 2030. 14th goal aims the protection and sustainable use of oceans, seas and marine sources for sustainable development. Additionally, the 15th development goal aims "the restoration and sustainable use of terrestrial ecosystems, combat deforestation, prevention and improvement of land degradation" as a whole. Following and in parallel to the SDGs, "Land Degradation Neutrality – LDN" was put into force by UNCDD, to support the signatory countries.

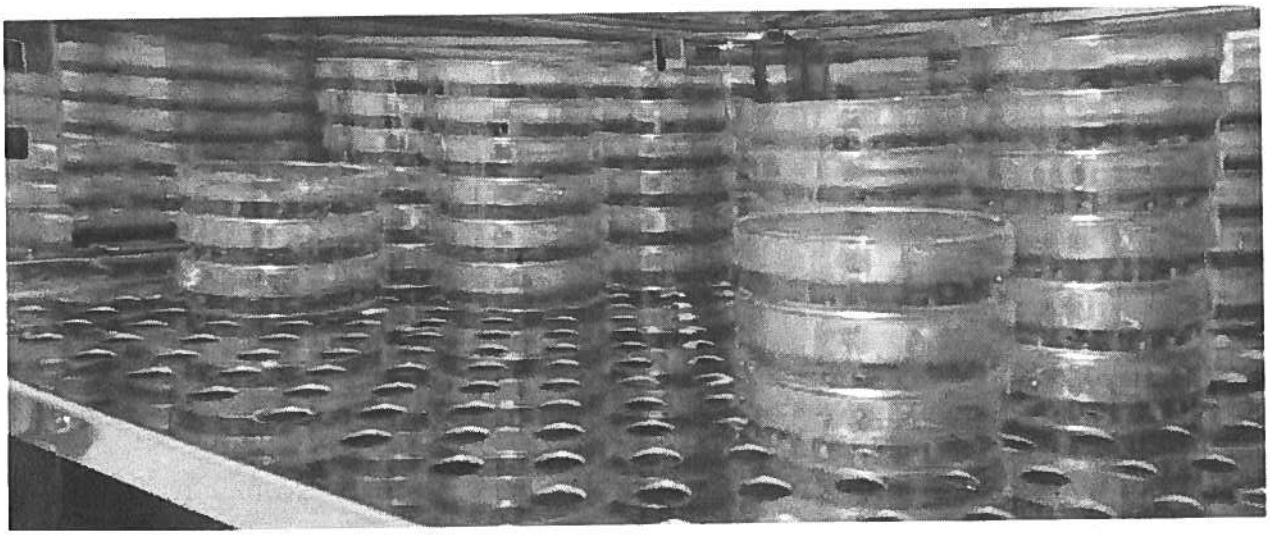
According to Article 3 of the Convention on Biodiversity; States have the sovereign right to exploit their own resources. Within this context Turkey is party to the following conventions:

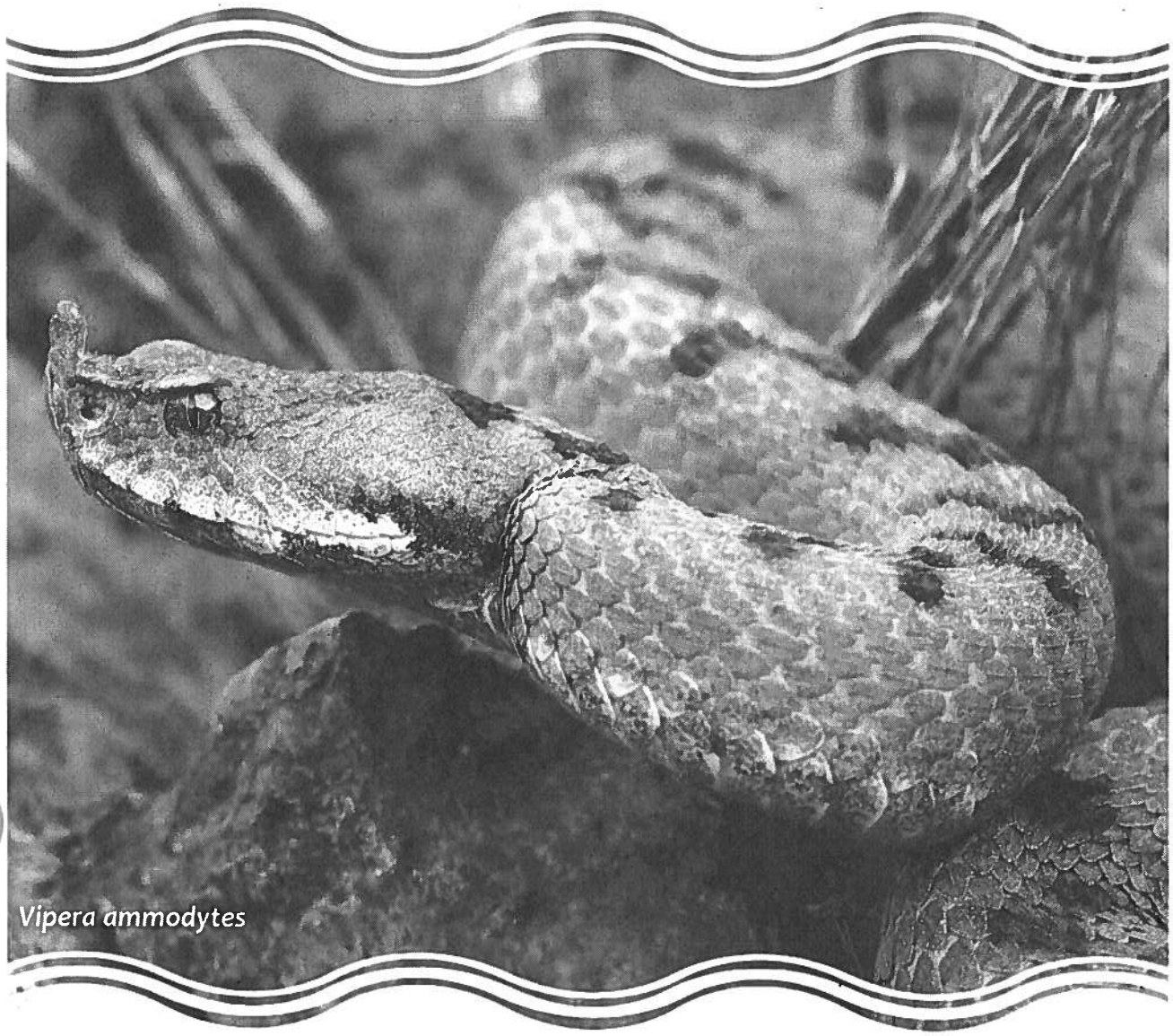
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Law dated 27/9/1994 and numbered 404)

- UN Convention on Biodiversity (Law dated 29.08.1996 and numbered 4177)

- International Treaty on Plant Genetic Resources for Food and Agriculture (Law dated 28/10/2005 and numbered 5414)

According to Article 15 of Convention on Biodiversity, the authority to determine access to genetic resources (samples of wild fauna and flora) rests with the national governments. This article also contains provisions on sharing the benefits arising from the genetic resources with the country providing such resources through mutual agreements and transfer agreements. Nevertheless, genetic resource becomes subject to intellectual property rights when transformed into a product or process through science and technology, hence the rights of disposition of the provider country on the genetic resource are lost unless the rights are not secured while providing the resource. Citizens or companies of highly developed countries, which are usually more advanced in science and technology and do not want to share the benefits arising from the genetic resources with the provider country, therefore try to access to such resources illegally.



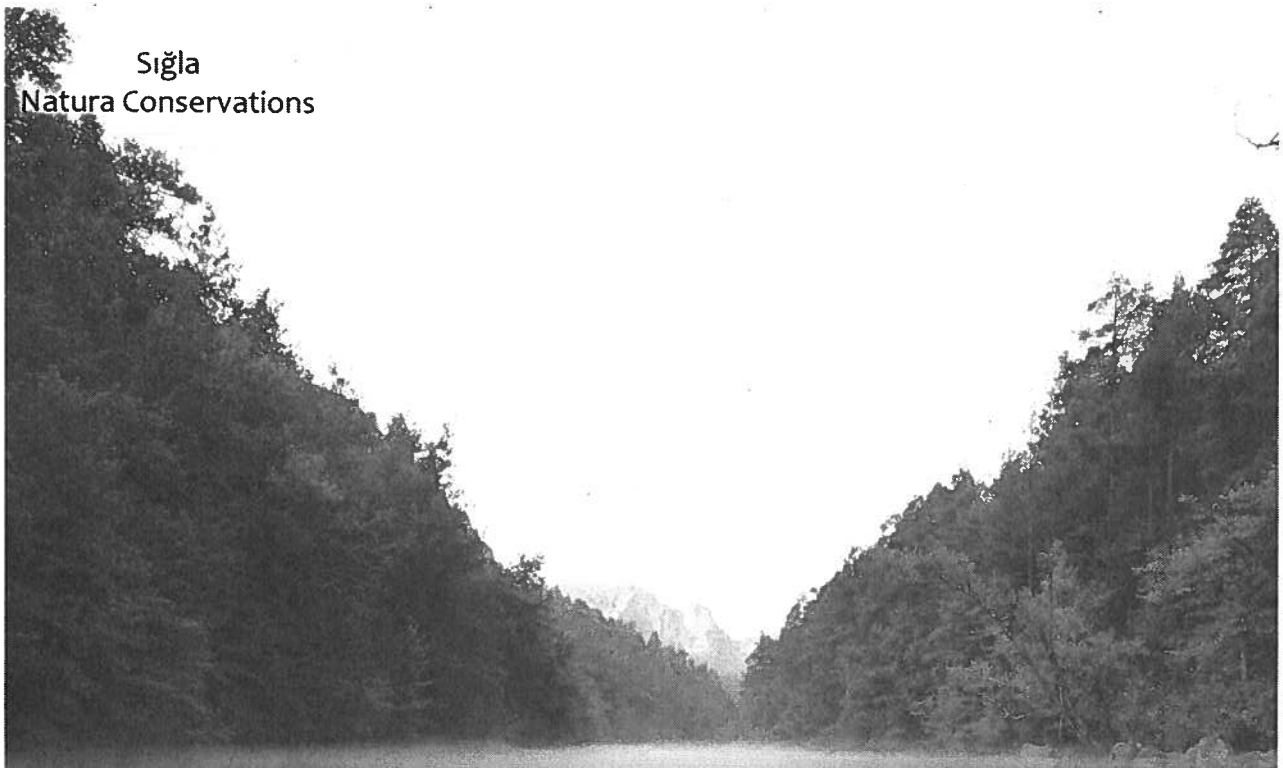


Vipera ammodytes

Turkey also faces with biopiracy due to its rich biodiversity that is pristine in transformation to economic resource and authentic genetic resources. Informative seminars on biopiracy were organized by our Ministry in 2012 for Provincial Gendarmerie Commands in 15 provinces, where the risk of biopiracy was the highest. Subsequently, project on "Combating Biopiracy" was conducted between 2013-2015 to prevent the abuse and damage to our biodiversity through biopiracy and to allow the use of potential economic, social, scientific, technologic, medical, commercial and cultural benefits arising from genetic resources for the interests of Turkey. During the project, activities to strengthen institutional capacity on protection, control and inspection, reinforce the legal and institutional regulations and increase public awareness were conducted, and "Combating Biopiracy Information Sharing System" was established and ***"Combating Biopiracy Action Plan"*** was prepared.

Furthermore, the "Nagoya Protocol on Access to Genetic Resources and Sharing of Benefits" entered into force on 12 October 2014 in the world as an additional protocol to the UN Convention on Biodiversity. Turkey has not yet been party to the Protocol (Forestry and Water Council, 2017a; Compiled by the Secretary of Council S. Hakan ERDEN).

Fritillaria imperialis



Sığla
Natura Conservations

Protected Areas

The concept of national park entered into practice in Turkey first with Article 25 of Law on Forest numbered 6831 in 1956. Later with the Law on National Parks numbered 2873, which entered into force in 1983, four protection status were defined as national park, parks of nature, nature preservation area and natural monument.
According to Article 2 of Law numbered 2873, protected areas were described as the following;

National Park; From the aspects of science and aesthetics, the pieces of nature that possess nationally and internationally rare natural and cultural resource values as well as areas of preservation, rest and tourism,

Nature Preservation Area; Parts of nature that carry importance in terms of science and training and which include rare, and/or endangered ecosystems, species and natural events that are required to be preserved and reserved for only scientific and training purposed utilization.

Parks of Nature; The parts of nature that have the features of a flora and wild life and which are suitable as a resting place for the public and their being entertained in an integrated scenery,

Monument of Nature; Parts of nature that are protected within the scope of national park principles and possess the features of nature as well as the qualities that events of nature create besides scientific value (Law No. 2873 on National Parks, 1983)

Since the declaration of the first national park in 1958 up to 2018, 44 National Parks, 243 Parks of Nature, 30 Nature Preservation Areas and 112 Monuments of Nature have been declared. (Table 2) Moreover, there are different protected area statuses within the scope of some international conventions (Ramsar, Bern, Conventions on Protection of World's Cultural and Natural Heritage etc.) and Turkey's national legislation (Law No. 6831 on Forest).

Wildlife Protection Areas and Wildlife Development Sites that are declared and managed under Law on Terrestrial Hunting numbered are also protected areas. Moreover, there are different protected area statuses within the scope of some international conventions (Ramsar, Bern, Conventions on Protection of World's Cultural and Natural Heritage etc.) and Turkey's national legislation (Law No. 6831 on Forest, Law No. 2863 on Protection of Cultural and Natural Assets etc.).

Table 2. Number and Size of Protected Areas in Turkey, Legislation and Responsible Authority Table

	Name	Number	Surface (Hectare)	Legislation subjected	Responsible authority
1	Nature Preservation Area	30	46,797.18	2873	MoAF*
2	National Park	44	846,288.4	2873	MoAF
3	Monument of Nature	112	7,487.82	2873	MoAF
4	Park of Nature	243	106,452.7	2873	MoAF
5	Wildlife Development Site	81	1,189,308	4915	MoAF
6	Wildlife Protection Site	1	8.000	4915	MoAF
7	RAMSAR Site	14	184.487	Ramsar Convention	MoAF
8	Wetland of National Importance	48	714.133	Bylaw on Protection of Wetlands	MoAF
9	Wetland of Local Importance	9	10.289	Bylaw on Protection of Wetlands	MoAF
10	Biosphere Reserve	1	25.258	UNESCO Human and Biosphere Programme	MoAF
11	Special Environment Conservation Area	16	2.459,749	383 Decree Law	MoEU**
12	Natural Site	2.434	1.991,700	2863	MoEU
13	Natural Monument (Monumental Tree)	8724		2863	MoEU
14	Natural Asset (Cave)	249		2863	MoEU

*Ministry of Agriculture and Forest

**Ministry of Environment and Urbanization

(Forestry and Water Council, 2017b; Compiled by the Secretary of Council S. Hakan ERDEN). (updated in 2018)

National Legistation

Legal status of biodiversity in Turkey is determined by constitution, legislations (laws and related bylaws), international conventions and protocols. In light of these documents, conservation and sustainable utilization of biodiversity in Turkey is under the responsibility and authority of several different institutions.

Constitution

Principle of conservation of cultural and natural resources has been stated with Article 63 of Constitution of Republic of Turkey: "State shall ensure the conservation of historical, cultural and natural assets and values, and shall take supportive and promotive measures with this purpose".

For the conservation of environment Article 56 states, "Everyone shall have the right to live in a healthy and balanced environment. Developing the environment, protecting the environmental health and preventing the pollution in environment is the task of State and the citizens".

Laws and Bylaws

According to, Article 410, paragraph (d) of The revision of the Presidential Decree No. 1 published in the Official Gazette No. 30474 dated July 10, 2018; it is our Ministry's responsibility to "Develop policies for the conservation of nature, detection of protected areas, national parks, parks of nature, monuments of nature, nature preservation areas, wetlands and conservation, management, development, operation and authorizing for operation of biodiversity and hunting and wildlife". Moreover, according to Article 420 paragraph (e) that is related to the General Directorate of Nature Conservation and National Parks, the tasks on "taking measures and cooperating with relevant institutions with regards to the flora and fauna that are protected under international conventions and to protection of areas", and paragraph (g), the tasks on "performing the tasks and operations related to the conservation and improvement of flora and fauna genetic resources within its field of authority" are under the authority of General Directorate of Nature Conservation and National Parks and hence of our Ministry.

Yedigöller National Park

LAW	SCOPE
Law on National Parks (No. 2873 and date 09.08.1983)	The objective is to arrange the principles pertaining to choosing and determining the national parks, parks of nature, monuments of nature and nature preservation areas which carry values at national and international level and to preserve, develop and manage these without spoiling their features and characteristics. According to Article 14 "At places that are within the scope of this Law; a) The natural and ecological balance and natural ecosystem values cannot be disturbed. b) The wild life cannot be destroyed, c) All kinds of interventions that may cause the characteristics of these fields to be lost or changed along with the acts and operations that may cause problems such as pollution of soil, water and air pollution as well as other environmental issues cannot be carried out. d) Production of all kinds of forestry products, hunting and grazing that may disturb the natural balance cannot be conducted. Furthermore, technical details for the implementation of the Law was put into force with Bylaw on National Parks (Official Gazette dated 12.12.1986 and numbered 19309).
Law on Environment (No. 2872 and dated 09.08.1983)	The purpose of this Law is to protect environment, which is the common asset of all the living beings, in line with the principles of sustainable environment and sustainable development. Within this context in Article 9 with the purpose of protecting the environment; a) It is essential that the biological diversity that makes up the environment and the ecosystem that hosts this diversity is protected f) For the purposes of sustaining the biological diversity it is essential that the endangered species and rare plant and animal species are protected and as such these cannot be made subjects of commercial trading in a way that is against the applicable legislation. With these articles, biodiversity is directly secured.

Küre Mountains National Park

LAW	SCOPE
Law on Terrestrial Hunting (No. 4915 and dated 01.07.2003)	The objective of this Law is to ensure the preservation of hunting and wild life animals together with their living environment, their development, taking control of hunting, arrangement of the hunting, utilization of hunting resources in a manner benefiting the national economy and establishing the cooperation among the related public and private legal entities for achieving sustainable hunting and wild life management. This Law covers the hunting and wild life animals and their living environments, their protection, and development, hunting and wild life management, establishment of game countries, their operating and having others operate them, the arrangement of hunting, hunting tourism, wild animal production and their trading, increasing the awareness of the society, training of the hunters, the crimes pertaining to hunting and wild life, the follow up of the crimes and the punishments. With Article 4 of the Law: "From among the hunting animals the ones that are in need of protection and which are determined by the Ministry and take place in the wild animal species will be taken under protection by the Central Hunting Commission and the wild life animals that are not hunting animals along with the other species will be taken under protection by the Ministry after the favourable opinions of the related institutions are obtained and when necessary. This decision is published in the Official Gazette. The wild animals that are taken under protection cannot be hunted. The wild animals cannot be disturbed during their reproduction, moulting and migration periods, their off springs and eggs cannot be collected, their nests cannot be destroyed, and the mammals cannot be disturbed during their hibernation. In cases where necessary principles pertaining to benefiting from these wild animals, their off springs and eggs, combating the harmful ones and the prohibited hunting procedures as well as the temporary ones are determined by the Ministry for the time during which they are under protection. The natural living environments of the hunting and wild animals, which make possible for their feeding, sheltering, breeding and protection cannot be poisoned, the wetlands cannot be polluted and dried and their natural structure cannot be changed. In the fields for wild life protection and development, the wild life cannot be destroyed, the ecosystem cannot be disturbed, the facilities even if they are outside the fields for wild life protection and development and breeding stations, if they have negative effects on these areas they will not be permitted, if there are any existing such facilities then their waste will both be released before it is treated, no buildings or facilities can be built other than the ones that are stated in the approved plans, rights of easement cannot be established," game and wild animals have been taken under protection.

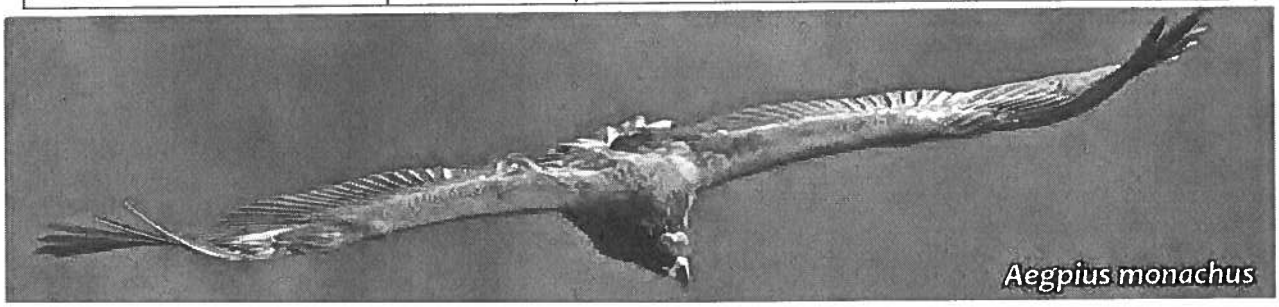
LAW	SCOPE
Law on Forests (No. 6831 and dated 31.08.1956)	Defines the principles on regarding management of forests as planning, operating and conservation of forests. Conservation forests, gene protection forests and seed stands shall be declared under this Law. In "Protection of Forests" Section of the Law; "with Article 14, in the State forests, following activities are prohibited: A) Cutting, removing grown saplings, destroying planting areas, damaging old trees, cutting their arms or upper sides; B) Cutting planted wet or dry trees, removing them from the roots, or assuring from them the cover, pieces for firing, resin or cutting horizontal or falling trees, removing roots, making coal; C) (Amendment: 3/11/1988 – Article 3493/1) Gathering bonito tree, linden tree, all kinds of forest plants, gall pineal, medical and industrial plants or forest seeds; D) (Amendment: 3/11/1988 - Article 3493/1) Use dynamite around the lakes, small lakes, barrage and brooks in the forests or hunting with the poison; E) ((Amendment: 3/11/1988 - Article 3493/1) Taking soil, gravel or others for private requirement without any of commercial need.
Law on Protection of Animals (No. 5199 and dated 24.06.2004)	The purpose of this Law; is to assure a comfortable living for animals and to ensure their proper treatment, to provide the best protection for animals against suffering from pain, distress and cruelty, and prevent all kinds of unjust treatments towards them. In Article 4 listed under "Basic Principles for the protection of animals and their well beings" section of the Law, the following is stated: "e) Protection of species and their habitat that are faced with extinction is essential." and, "f) It is essential to not deprive wild animals from their natural environments, nor to catch and deprive them of their freedom. Moreover, the technical details on the implementation of the Law was put into force with Implementing Bylaw on Protection of Animals (Official Gazette No. 26166 and dated 12.05.2006).
Law on Water Products (No. 1380 and dated 22.03.1971)	It contains basic provisions on protection, hunting, production, trading, health and inspection of aquatic livings in the seas and inland waters and covers provision on the principles, procedures, prohibitions, restrictions, obligations and other measures on harmful and pollutant materials that are prohibited to spill into the production sites.

Table 3. Laws on conservation of biodiversity in Turkey

LAW	SCOPE
Law on Agriculture (No. 5488 and dated 18.04.2006)	The purpose of this Law is to determine agricultural sector and rural area development plans and strategies in line with the policies and regulations supporting agricultural development. The Law defines the principles, objectives and priorities of agricultural policies, training and advisory services for farmers, protection of biodiversity and genetic resources; and ensuring biosecurity and biosafety It consists of definition of aims, scope and subjects of agricultural policies; identification of main support programmes with the aims and principles of agricultural support policies; market regulations for performing these programmes, and definition of their funding and agricultural structuring; legal and administrative regulations regarding priority research and development programmes to be employed in agricultural sector and all procedures and principles for these. The Law also includes conservation and development of natural and biological resources within agricultural policies; and the task to conduct researches on conservation and development of biological diversity, genetic resources and ecosystems has been assigned to the Ministry of Food, Agriculture and Livestock.
Law on Veterinary Services, Plant Health, Food and Feed (No. 5996 and dated 11.06.2010)	The objective of this Law is to protect and ensure food and feed safety, public health, plant and animal health, animal improvement and welfare and consumer interests taking into consideration the environmental protection. This Law shall apply to all stages of production, processing and distribution of food, materials and articles intended to come into contact with foodstuffs and other residues and contaminants, control of epidemic or contagious animal diseases and harmful organisms in plants and plant products, welfare of farm and experimental animals and pet animals, zootechnics, veterinary health and plant protection products, veterinary and plant health services, entry and exit procedures of live animals and products to country as well as related official controls and sanctions.
Law on the Protection of Breeder's Rights for New Plant Varieties (No. 5042 and dated 08.01.2004)	The purpose of this Law is to encourage the development of plant varieties, and to ensure the protection of new varieties and breeder's rights. This Law covers all plant species.
Seed Law (No. 5553 and dated 31.10.2006)	With the purpose to improve productivity and quality in plant production, to ensure quality assurance for seedlings, to instate applicable regulations for the production and trade of seedlings, and to implement all measures required to restructure and develop the seed sector, this Law entered into force instead of Law on registration and certification of seedlings, numbered 308 and dated 21/06/1963.
Law on the Conservation of Cultural and Natural Assets (No. 2863 and dated 21.07.1983)	The purpose of the Law is to define movable and immovable cultural and natural assets to be protected and regulate proceedings and activities.

Table 3. Laws on conservation of biodiversity in Turkey

LAW	SCOPE
Seed Law (No. 5553 and dated 31.10.2006)	With the purpose to improve productivity and quality in plant production, to ensure quality assurance for seedlings, to instate applicable regulations for the production and trade of seedlings, and to implement all measures required to restructure and develop the seed sector, this Law entered into force instead of Law on registration and certification of seedlings, numbered 308 and dated 21/06/1963.
Law on the Conservation of Cultural and Natural Assets (No. 2863 and dated 21.07.1983)	The purpose of the Law is to define movable and immovable cultural and natural assets to be protected and regulate proceedings and activities.
Regulations pertaining to foreigners, or those applying on their behalf, wishing to do scientific research, study, or film making in Turkey, as well as to members of the foreign press (No. 88/12839 and dated 4/4/1988)	Foreign real and legal persons, or those applying on their behalf, wishing to do scientific research, study, or film making in Turkey must apply to the authority in the area of study or to the administration that this authority is attached to personally or via post (fax, e-mail, etc.). Applications to research and studies related to biological diversity shall be made to the General Directorate of Nature Conservation and Natural Parks, Ministry of Forestry and Water Affairs. The applications of foreign researches can only be considered, in case of cooperation with a Turkish university. Granting a permission upon an assessment of the application does not include collecting samples and materials from nature. Foreign researchers cannot work on the field without an accompanying academician from Turkish universities in cooperation. Foreign and Turkish researchers must demonstrate the research permission approved by the Ministry, if requested.
Law on Biosafety (No. 5977 and dated 18.03.2010)	The objective of the Law is to establish and implement a bio safety system in order to prevent the potential risks of the genetically modified organisms and products thereof obtained through modern biotechnological means within the context of scientific and technological advancements; protect human, animal and plant health; safeguard and ensure the sustainable use of the environment and biological diversity and to determine the procedures and principles governing the control, regulation and monitoring of these activities.
Law on Industrial Property (No. 6769 and dated 22.12.2016)	The purpose of this Law is the protection of the rights regarding the brand, geographical indication, design, patent, utility model and traditional product names and thus contribute in the realization of technological, economic and social developments.



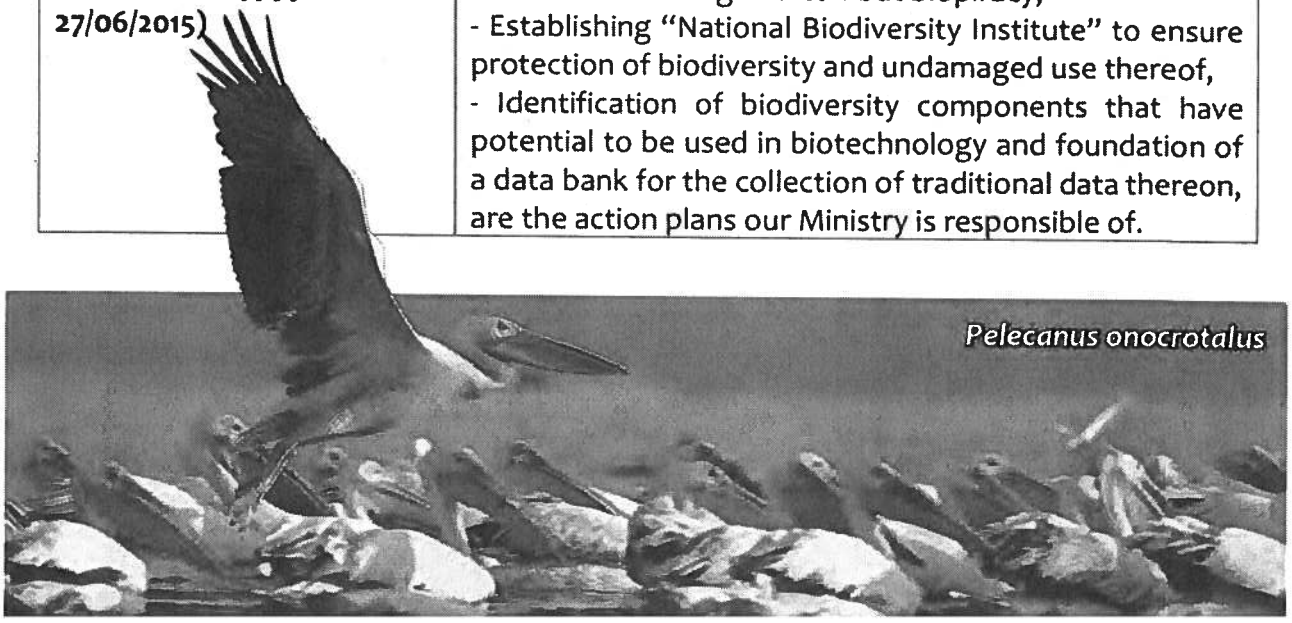
Aegpius monachus

BYLAWS	SCOPE
Regulation on Implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Official Gazette No. 24623 of 27.12.2001)	The objective of this Regulation is to regulate the procedures and principles regarding international trading of animals and plants covered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora in order to ensure the sustainable use thereof.
Regulation on the Preservation of Wetlands (Official Gazette No. 28962 of 04.04.2014)	The objective of the Regulation is to preserve and develop all the wetlands regardless of whether they have any international significance or not as a habitat for the waterfowls and to establish the cooperation and the coordination among the establishments and the institutions which are assigned to the subject. Biodiversity has been taken under protection with the statement in Article 5 Paragraph (b) of protection principles section: "Necessary measures are taken for the protection and development of biological variety in the wetlands".
Regulation on Beekeeping (Official Gazette No. 28128 of 30.11.2011)	The objective of this Regulation is to determine and spread the basic principles on breeding, research, detection, conservation and improvement of gene resources, artificial insemination, establishment of new lines, import and export of stock material, queen bee breeding for commercial purposes and taking measures for the protection of bee health.
The Regulation on the Collection, Storage and Use of Plant Genetic Resources (Official Gazette No. 21316 of 15/08/1992)	This Regulation has been drafted to regulate the principles regarding survey, collection, conservation of the collected material, production, renewal, characterization, validation, documentation and change of the plant genetic resources to protect and develop such resources in Turkey. National Gene Bank and Herbarium have been established according to this Regulation. The Regulation also covers the research permissions for plant genetic resources.
Regulation on the Protection of Breeder's Rights for New Plant Varieties (Official Gazette No. 25551 of 12/08/2004)	The purpose of this Regulation is to ensure the protection of breeder's rights of new varieties.
Regulation on Protection of Living Spaces of Game and Wild Animals, Regulation on Harm Struggling Procedure and Fundamental Principles (Official Gazette No. 25976 of 24/10/2005)	This regulation encloses the decisions on species of game and wild animals, survival of these species in natural environment, protection of these species, living spaces, catching of these species, collection of these species, scientific research on these species, interlacing and marking of these species, diseases of these species and it encloses punishment decisions.

BYLAWS	SCOPE
Regulation on Conservation and Sustainable Use of Gene Resources of Pets (Official Gazette 28150 of 22/12/2011)	This Regulation provides principles and procedures for conservation and sustainable use of gene resources of pets in Turkey.
Regulation on Registration of Gene Resources of Pets (Official Gazette 28150 of 22/12/2011)	The objective of this Regulation is to regulate the principles and procedures of registration of pet breeds, types, local type, line and ecotypes and the newly established pet breeds, types, local type, line and ecotypes and hybrids.
Regulation on Use and Exportation of Gene Resources of Domestic Pets (Official Gazette No. 28418 of 21.09.2012)	The purpose of this Regulation is to regulate principles and procedures for use and exportation of gene resources of domestic pets.
Regulation on Registration of Aquatic Genetic Resources (Official Gazette No. 28388 of 18/08/2012)	The objective of this Regulation is to regulate the principles and procedures for the registration of aquatic genetic resources living in inland waters and seas of Turkey.
Regulation on Protection and Sustainable Use of Aquatic Genetic Resources (Official Gazette No. 28396 of 29/08/2012)	The objective of this Regulation is to regulate the principles and procedures for identification, protection, sustainable use, policy and infrastructure building of aquatic genetic resources living in inland waters and seas of Turkey.
Regulation on The Use of Aquatic Genetic Resources for Research Purposes and Import or Export of the Material (Official Gazette 29381 of 09/06/2015)	The objective of this Regulation is to regulate the principles and procedures for the use of aquatic genetic resources (AqGR)for research purposes and import or export of the material.
Bylaw on Fisheries (Official Gazette No. 22223 of 10.03.1995)	This Bylaw covers issues on principles, procedures, prohibitions, restrictions, obligations, measures, controls and inspections related to aquatic license certificates, gaming, changing of production places, use of explosives and damaging materials in gaming, quality, terms and use of harmful and pollutant materials that are prohibited to be spilled in aquatic production places, troll hunting, incidentally procured aquaculture, health of aquaculture, products and semi-products from aquaculture, marketing of aquaculture for the protection of aquatic stocks, and to take economic benefit from aquatic resources.

Table 5. Strategic Documents related to Biodiversity

Strategic Documents	SCOPE
10th Development Plan (2014-2018) (Official Gazette No. 28699 of 06/07/2013)	Under the section 2.3.7. Protection of Environment "Value of natural resources and ecosystem services will be calculated and will be considered in policy making and implementation processes." "1038. Practices towards improving environmental consciousness, especially protection of nature and support of sustainable consumption, will be promoted." and "1039. Detection, protection, sustainable usage, development and monitoring of biodiversity that is important for agriculture, forest, food and pharmaceutical industry will be ensured." policies are listed. Moreover, in paragraph 767 of the plan, it is aimed to assign priority to development of high value-added products, protection of genetic resources, breeding activities, research activities on nanotechnology and biotechnology; establishment of new agriculture and food techno-parks and sectoral technology platforms.
National Biotechnology Strategy and Action Plan of Turkey (2015-2018) (Official Gazette No. 29399 of 27/06/2015)	Actions have been taken in Turkey to strengthen RD studies and to promote product development. - Making legal regulations on access to genetic resources and benefit sharing and combat biopiracy, - Establishing "National Biodiversity Institute" to ensure protection of biodiversity and undamaged use thereof, - Identification of biodiversity components that have potential to be used in biotechnology and foundation of a data bank for the collection of traditional data thereon, are the action plans our Ministry is responsible of.



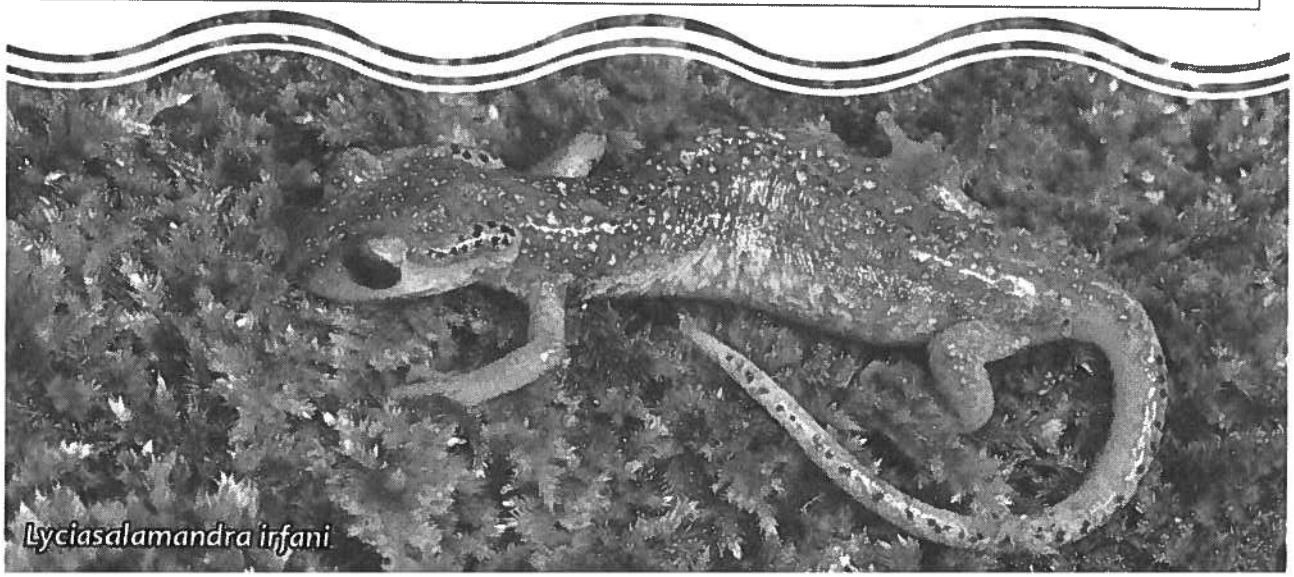
Pelecanus onocrotalus

Strategic Documents	SCOPE
National Marine Researches Programme: 2016-2026 (in accordance with 2015-2023 National Marine Research Strategy of Turkey)	-Focusing on RD activities in the field of marine biotechnology, -Developing innovative methods based on system methodology and –omics-based disciplines as genomics, proteomics, metabolomics researching genomes and molecules of different species to breed selective species, -Producing micro algae resource stocks to support optimization of the most appropriate waters for biofuel production; -Controlling the metabolisms of marine micro algae, developing production methods and photosynthetic efficiency, increasing lipid production, obtaining mass cultures (mixed and single cultures) in the most suitable character, improving knowledge on basic biological functions for biofuel production and biorefinery applications, -Developing efficient harvest, segregation and purification processes for micro and macro algae's, -Increasing focus on basic research fields as taxonomy, systematics, physiology, molecular, genetics of marine species and organisms in rare and extraordinary environmental conditions, to discover new bioactive molecules, -Developing technical aspects of biodiscovery information line that includes bioanalysis, structural identification methods and software consisting of several materials of marine resources and bioactive molecule segregation, -Providing access to new sustainable medical resources and healthcare products over scientific advantages provided by fields as aquaculture, microbial culture and tissue culture, chemical synthesis and biosynthetic and engineering, - Developing marine environment monitoring system and making use of high resolution automatic biosensitivity technologies to examine the water quality in coastal areas per se, to monitor and predict the changes in human health due to harmful algae explosions, - Supporting development of commercial tools and platforms to reinforce information in DNA based technologies for definition of organisms and populations and routine analysis, -And establishing and maintaining infrastructure for pole researches have been listed.

Pelargonium endlicherianum

Table 5. Strategic Documents related to Biodiversity

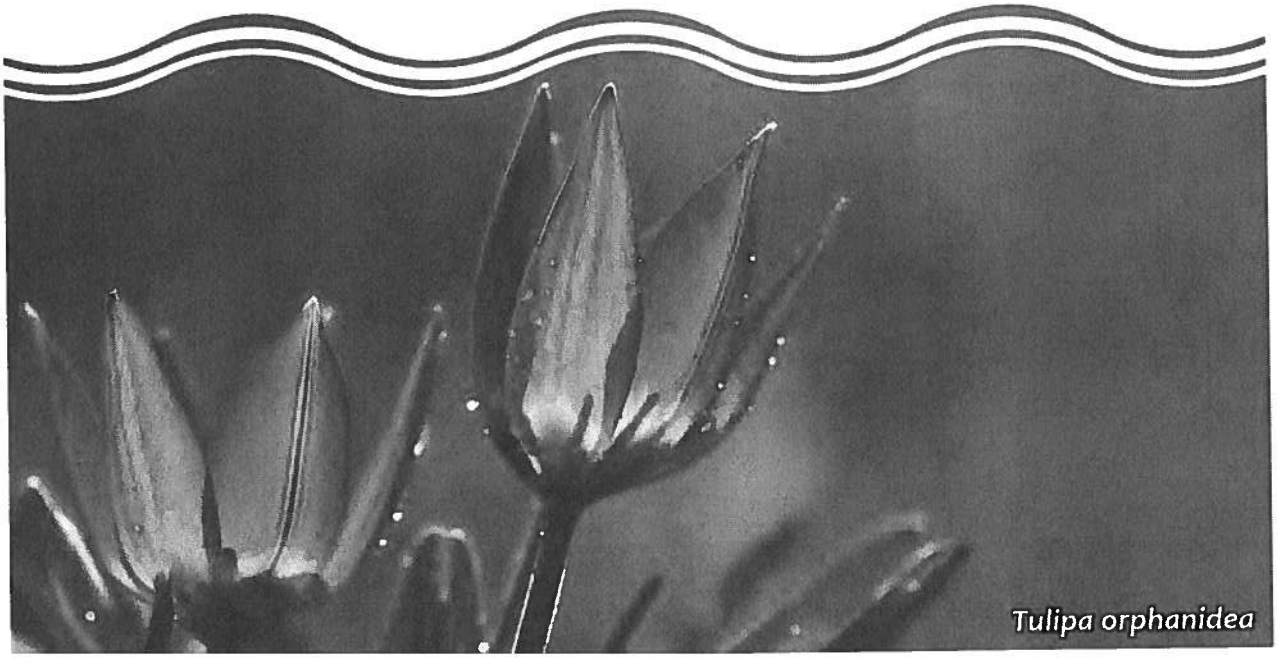
Strategic Documents	SCOPE
National Science, Technology and Innovation Strategy 2011-2016	Strategies to -Spread the culture of science and technology in the society, -Support researches that will found the basis for emerging technologies, -Promote the transformation of research results to commercial products and services -Spread multi partner and multidiscipline RD cooperation culture, increase product development by making use of technologic developments, have been developed.
TÜBİTAK Vision 2023	Biotechnology and gene technolgy are among strategic technologies; and strategic goals have been defined for product development in the field of agriculture, livestock, health, food and other areas of industry.
National Biological Diversity Strategy and Action Plan (NBSAP) (2007-2017)	There are actions in accordance with three main goals of UN Convention on Biodiversity.
Strategic Plan of Ministry of Forestry and Water Affairs of Republic of Turkey (2013-2017)	Strategy on "studies to establish Biodiversity Institute of Turkey will be continued" has been developed for the strategic objective to "S.H.5.1 Provide conservation, development and improvement of species and ecosystems.



Lyciasalamandra irfani

Table 5. Strategic Documents related to Biodiversity

Strategic Documents	SCOPE
I. Decisions of Forestry and Water Council (2013)	Among the decisions of "Nature Conservation and Biodiversity Commission"; Decision 1. Sustainable Biodiversity Management should be established. Decision 2. Efficiency in Specie Protection Studies should be increased. Decision 5. Biological Diversity and Ecosystem Economy should be established.
Strategic Plan 2013-2017 of former Ministry of Food, Agriculture and Livestock	Meadow protection and improvement projects will continue to protect and register genetic resources and biodiversity; protect soil, water resources and biodiversity and ensure they are used efficiently; raise awareness of farmers; protect, improve and maintain agricultural resources; increase grazing quality by improving meadows, pastures and winter pastures; prevent erosion by implementing soil protection measures.



Tulipa orphanidea

NATIONAL BIODIVERSITY ACTION PLAN (2018-2028)

NATIONAL OBJECTIVES AND ACTIONS

1. NATIONAL OBJECTIVE

Pressures and threats on biodiversity and ecosystems will be determined, reduced to the possible lowest level or removed totally.

Actions

1.1. Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution.

1.2. Studies on improving the measures for identifying, monitoring, and controlling the entrance routes of invasive species and alien species and preventing entrance and habitation thereof will increasingly be continued.

1.3. Potential effects of organisms developed using syntetic biology techniques on conservation and sustainable use of biological diversity will be revealed and via necessary risk assesments, risk evaluation, and monitoring procedures will be developed and legislation regulations will be prepared.

1.4. Studies on creating and strengthening GMO monitoring procedures will increasingly be continued in order to prevent their out of purpose usage.

1. NATIONAL OBJECTIVE

Biological diversity components (ecosystem, species and genetic variability) will be determined, monitored, and species specific and ecosystem-based conservation approaches (traditional and modern) will be developed by determining current condition of biodiversity.

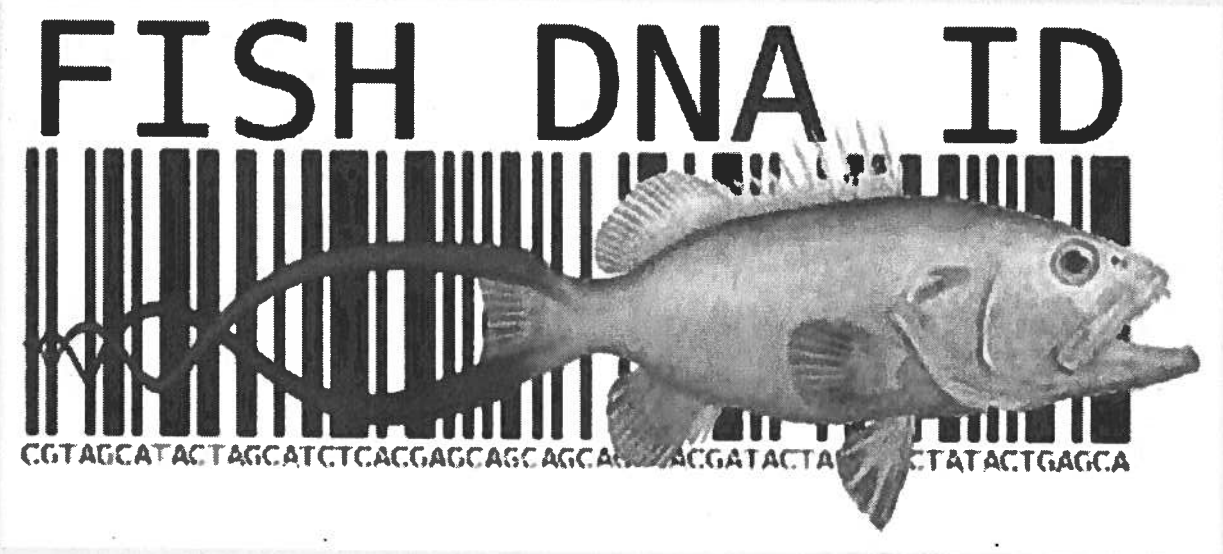
Actions

2.1. National biological diversity inventory will be determined and by doing so, current condition of biodiversity will be defined and species will be registered; DNA Barcoding method will be started to be used within this process.

DNA BARCODING

Although there are over 2 million identified species on earth, the real number is anticipated to change between 5 and 30 million (United Nations Environment Programme Global Environment Outlook 4, 2007). Existing species should first be identified for an effective conservation. Every year, thousands of plant and animal species go extinct before being identified. Classical taxonomy remains insufficient in identification of biodiversity before extinction (CSHL DNA Learning Center, 2014).

"DNA Barcoding" is a new taxonomic tool that overcomes the difficulties of classical classification method and can rapidly identify the species as a complementary technique to the conventional taxonomy.



DNA Barcoding (Bay Area Science, 2017)

Through the developed "DNA Barcoding" technique, species are distinguished from each other and identified via DNA sequences of the species called DNA barcodes. With this technique the species are identified by analysing certain DNA sequence regions without the need of using the morphological features of species as shape, size and colour. Researchers can rapidly idenify species with the help of molecular biology techniques, without using classical classification methods. At the same time, small, degraded or industrially processed pieces are sufficient for identification (Barcode of Life, Identifying Species with DNA Barcoding, 2016).

Besides its use in identificaton of species and discovery of new species, endangered species, invasive and alien species, species that are illegally traded or contamination in foods can be detected with "DNA Barcoding". This method, through which species can be identified with less cost, provides the identification and monitoring of agriculture and forest pests and biological control agents, identification and monitoring of pathogenic vectors for humans and naturally occurring diseases (UNEP/CBD/SBSTTA/18/INF/20; 2014).

Prepared by: Biologist (M.S.) Elif SAKALLI (Sakallı, 2016)

2.2. Monitoring studies will be performed for the registered national biodiversity data and e-DNA (environmental DNA) monitoring technique will start to be used within the process.

ENVIRONMENTAL DNA (eDNA)

eDNA montioring of species
(University of California, CaleDNA; 2017)

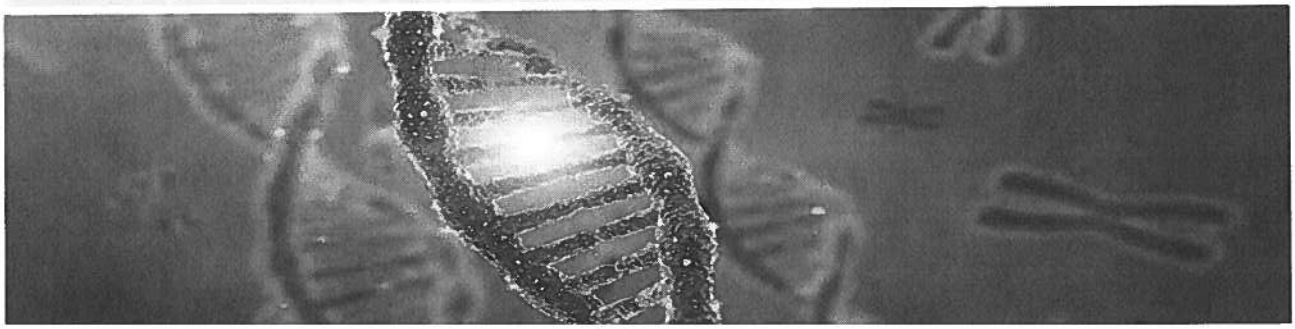
eDNA, "Environmental DNA" is defined as "genetic material obtained directly from environmental samples as soil, sediments or water without any obvious signs of biological source.

Living species leave their cells, tissues, skin pieces to their surroundings as they are in interaction with the environment they are in; and dead individuals leave their leaked genetic materials. Genetic material obtained from nature using molecular biology techniques (eDNA), allows detection of species that existed in the analyzed environment (Thomsen and Willerslev, 2015).

Through eDNA, it is possible to detect the species that lived in the past and living species that live in different ecosystems under today's conditions. eDNA gives more accurate information than the fossile resources related to time of extinction of species (Haile et al., 2009). Species in terrestrial and aquatic ecosystems in today's conditions can be monitored more effectively by using eDNA.

eDNA monitoring is more advantageous in comparison with traditional monitoring methods due to possibility of making standard sampling, performance of monitoring without harming species and their environment, correct detection of different life stages of species, monitoring independent from weather conditions, detection of species without need for professional taxonomists, and performance of monitoring generally with less cost compared to traditional methods (Thomsen and Willerslev, 2015).

Prepared by: Biologist (M.S.) Elif SAKALLI (Sakalli, 2016)



2.3. Studies to determine and monitor endemic and endangered species; develop and implement species specific conservation methods will increasingly be continued.

2.4. In order to conserve biological diversity, studies to develop and implement species specific or ecosystem based conservation approaches by using traditional or advanced biotechnological methods will be conducted.

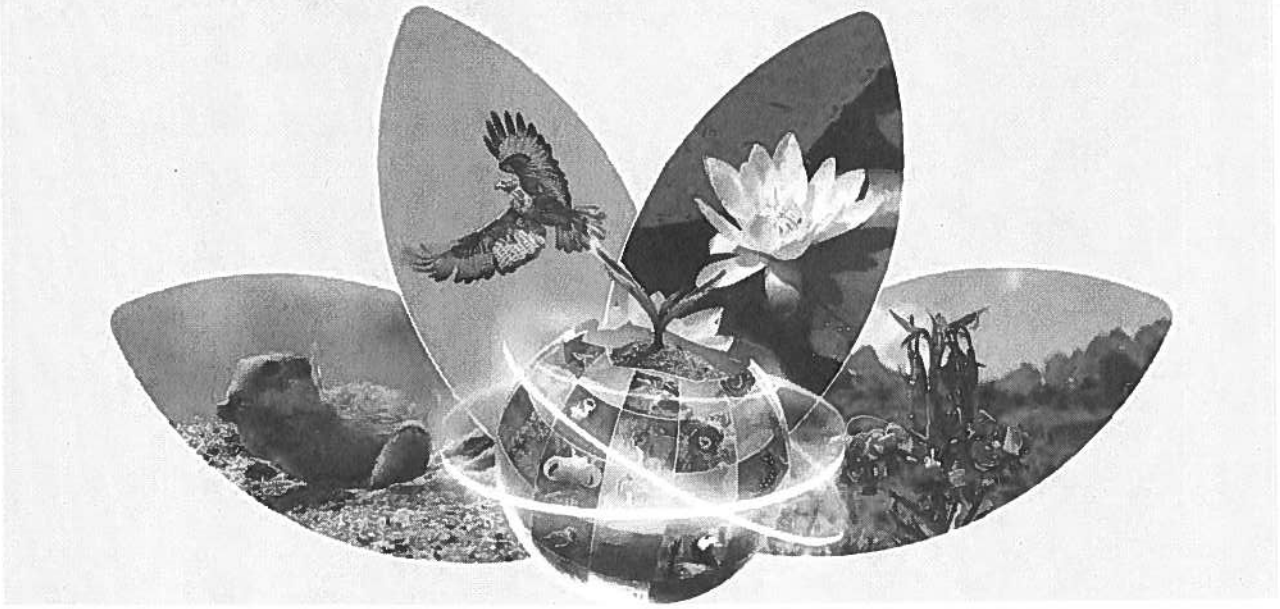
2.5. Studies to detect terrestrial and aquatic microorganisms and to identify them at molecular level to determine their functions in ecosystems will be conducted.

BIOLOGICAL DIVERSITY AND GENETIC RESOURCES CONSERVATION METHODS

Conservation methods for biological diversity and genetic resources were defined in Turkey at the end of the last century and national goals and objectives were established taking into account the conditions (especially biological richness) of Turkey. Today with the significant impact and occurance of issues such as deforestation, reduction in water sources, climate change, increasing population and food problems and GMO (Genetically Modified Organisms), biological diversity and plant genetic sources that have an important part among this must be assessed in differnt aspects (Dilbirliği, 2007).

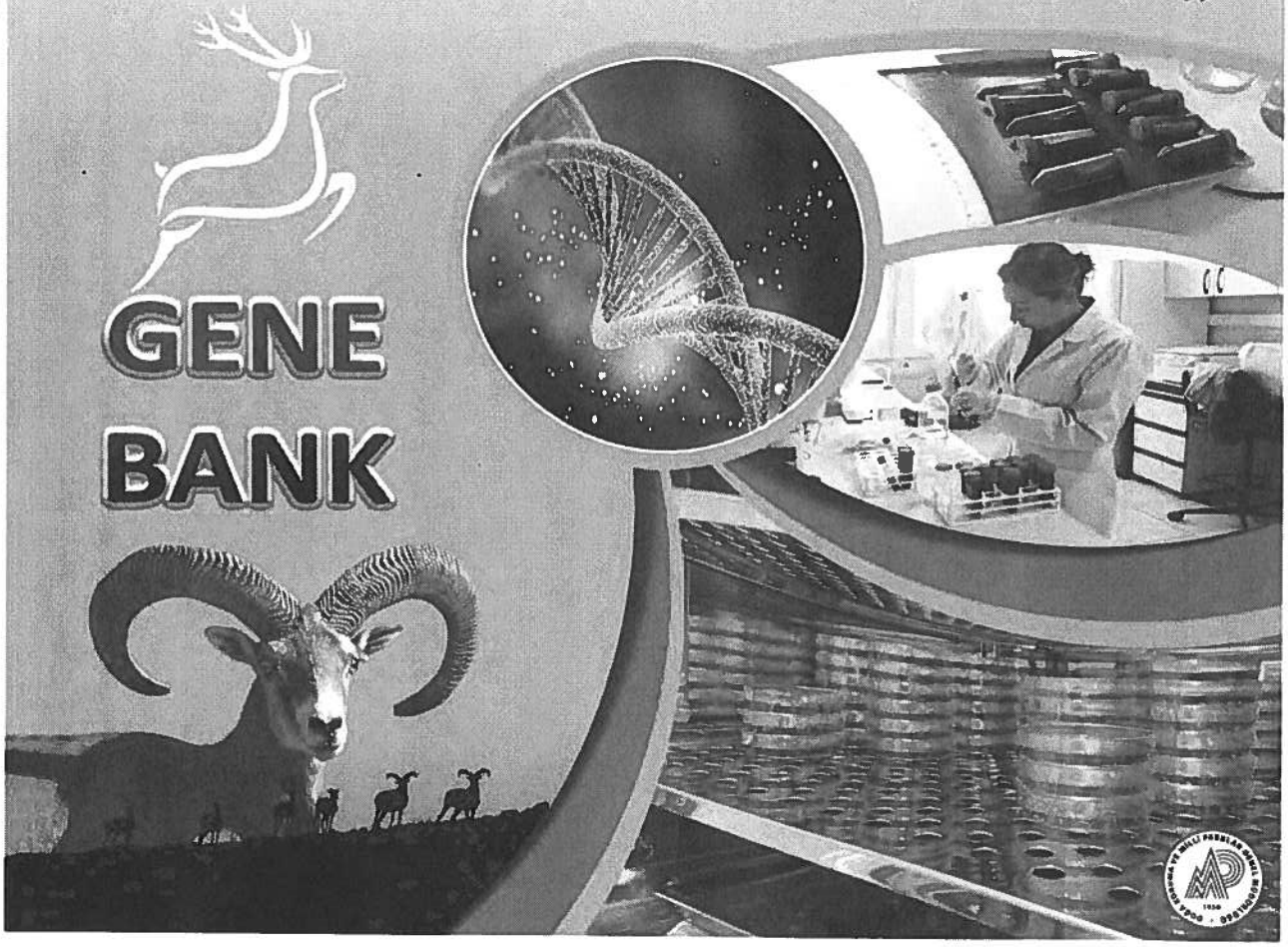
In-situ and ex-situ conservation approaches are followed for the conservation of biological diversity and genetic sources. In the case of in-situ conservation, the protected areas are valuable reserve for wild relatives of cultigens, medicinal and herbacious plants as well as the other components of ecosystems (Maxted et al., 2000; Tan and Tan 2002; Tan and Tan, 2004). The importance of these areas in the conservation of natural environment has been taken into account since the first years of the Republic. In-situ conservation programmes such as National Parks, Nature Conservation Areas, Natural Parks, Wildlife Development Sites, Special Environment Protection Areas, Natural Sites and Gene Protection and Management Areas have been implemented since 1950s in Turkey. Foundation of the first national park in 1958, when the environmental problems were not intensified in Turkey, shows a well-designed approach to nature conservation.

And ex-situ conservation in Turkey is implemented through gene banks, seed banks, field gene banks, in vitro banks, cryobanks (conservation under ultra cold conditions), collection gardens, botanic gardens, arboretum and herbarium. However, in ex-situ conservation, the interaction between species and environment does not continue. On the other hand, damages from natural processes that are unavoidable through in-situ conservation require the species to be protected outside these areas as well. Therefore, ex-situ and in-situ conservation activities are implemented as complementary programmes to each other (Tan, 2010). ***Prepared by:*** Biologist (M.S.) Seda ERDOĞAN (Erdoğan, 2014)



CASE STUDY

Establishment of a gene bank for big mammal species living in Turkey was aimed with the project entitled "Research, Conservation and Management of Big Mammals in line with the Objective to Protect National Biodiversity and Gene Sources (KAMAG 1007)" performed between 2010-2014 under the auspices of General Directoreate of Nature Conservation and National Parks of Former Ministry of Forestry and Water Affairs, management of TÜBİTAK Genetic Engineering and Biotechnology Institute and partnership of Selçuk University. among the objectives of the project there are; establishment of DNA and cell banks fort he conservation of genetic sources of individuals from 14 herbivorous and carnivorous mammal species (caprelous, gazelle, red deer, ovis ammon, capra, caracal, lupus, hyena, lynx, Brown bear, fox, coyote, rupicapra, felis chaus, fallow deer), development of genotyping test panels to be used in criminal cases and genetic characterization of species. During the project, DNA samples were obtained thorugh sampling of tissue and blood from 14 big mammal specie fort he gene bank. AMong the outputs of the project, there are establishment of gene bank, identification of biological diversity, revision of specie and subspecie names, definiton of criteria fort he registry of species within the scope of protection of animal gene sources, detection of poppulation sizes ad demographic structure of species, creation of a distribution map for mammals and conducting monitoring studies by putting tracking collars suitable for wild animals. Moreover, this project enables studies as reproducing wild animals through cloning, detection of genes resistant to diseaases, transfer of genes to domestic animals by establishment of DNA and Cell Banks for wild animals (**TÜBİTAK**-MAM, 2013).



3. NATIONAL OBJECTIVE

Conservation and sustainable management of biodiversity of areas exposed to agriculture, forestry and fishing activities in the country will be ensured.

Actions

3.1. Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured.

3.2. Studies on minimization of pressures and threats to agriculture, forest and fishing will be continued.

Alburnus tarichi

Crocus wattiorum

4. NATIONAL OBJECTIVE

Awareness of the public and administrators on ecosystem services will be raised, benefits from ecosystem services will be increased and sustainable biodiversity management will be ensured.

ECOSYSTEM SERVICES

As known, natural sources such as food, clean water, clean air, accomodation etc. that replies the requirements of rapidly growing human population are exhaustible resources with a certain scarcity.These resources that are vital for humankind to continue its existence and for the social and economical development and vital activities – more explicitly speaking – "biological diversity and ecosystem services" are the most important security for human prosperity and future. People are directly or indirectly in need of benefits from biodiversity and ecosystem services in order to continue their lives –in particular the regions with an underdeveloped, poor and transitional economy.

TEEB (The Economics of Ecosystems and Biodiversity) classifies ecosystem services as below (TEEB, 2017):

I) Provisioning Services: food, water and similar materials or energy outputs from ecosystems
II) Regulating Services: regulating the quality of air and soil, control of natural disasters as flood, overflow etc.
III) Supporting Services: soil formation, photosytnthesis, primary production, water and nutrient cycle
IV) Cultural Services: Recreation, mental and physical health, tourism, aesthetic values, inspiration for culture, art and design.

Relation of biodiversity components among each other and with abiotic environments creates the ecological processes, ecosystem functions and services. For example, completion of material cycle by various microorganisms in the environment of soil, water and air enables refinement of air and water. Birds, bats and insects provide pollination, wheras plants provide for erosion control and carbon storage, and wetlands for water retention (MEA, 2005; European Environment Agency, 2011).

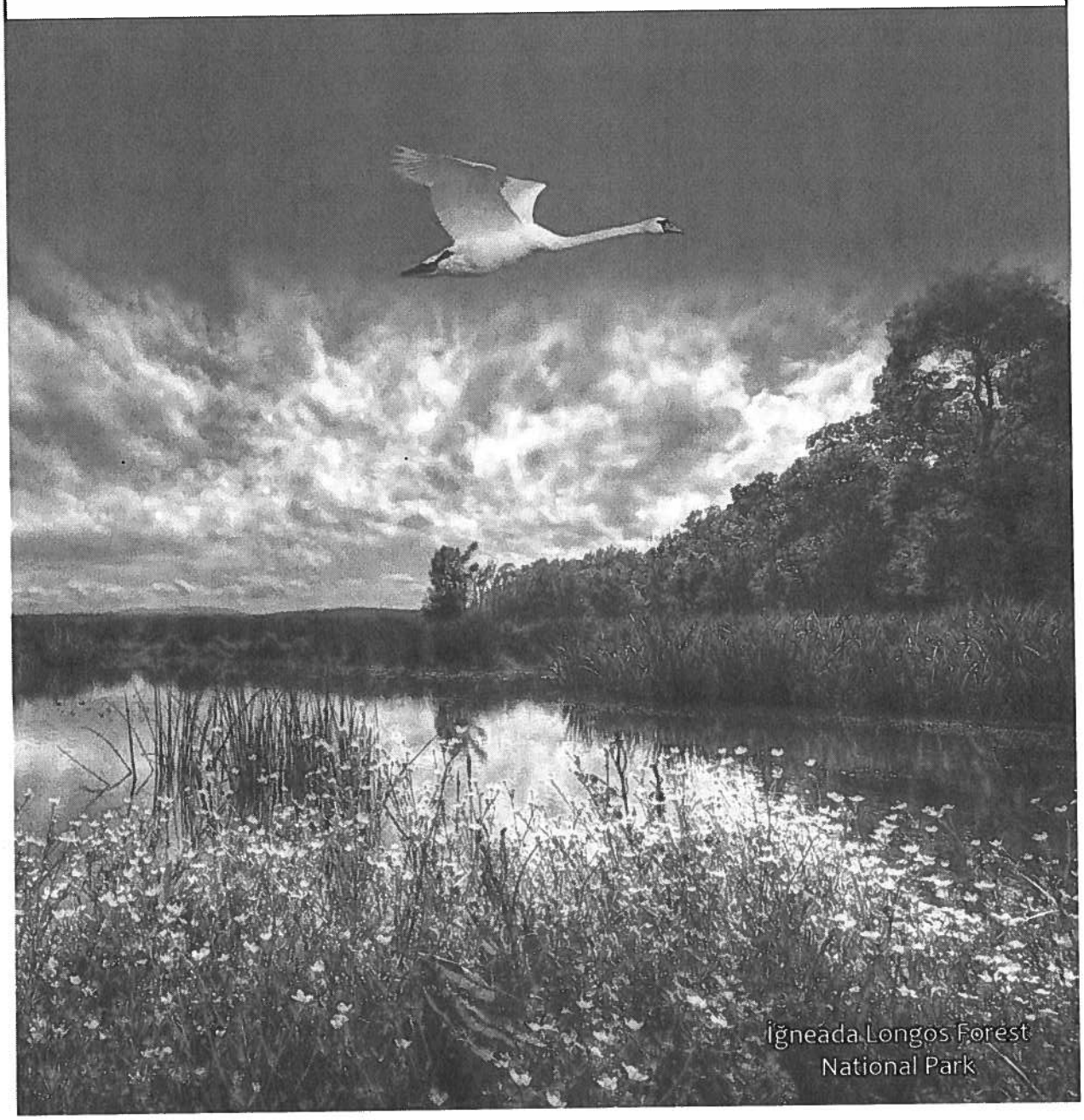
Bioassessment studies of ecosystem services are carried out to calculate the economic value of existing ecosystem services in the world, to reveal the impact of ecosystem changes on human prosperity and to set forth required measures and activities through scientific and economic analyses. The first comprehensive study on assessment of ecosystem services in Turkey was conducted in Sultan Reedbed National Park, based on Millenium Ecosystem Assessment methodology, in 2012 by Former Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks (MoWFA, 2012).
Prepared by: Environmental Engineer (M.S.) Asiye DÜŞÜNCELİ

Actions

4.1. Awareness on ecosystem services will be raised among public and private sectors, and training of specialists will be ensured.

4.2. In order to increase benefits from ecosystem services, studies to reduce the pressures such as pollution (air, water, soil), habitat loss and degradation, global warming, over consumption of natural resources to the lowest level will increasingly be continued.

4.3. In order to utilize ecosystem services effectively, studies for sustainable use of biological diversity will be conducted.



İğneada Longos Forest National Park

EFFICIENT USE OF BENEFITS FROM ECOSYSTEM SERVICES THROUGH CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY

Exemplary Technology: Synthetic Biology

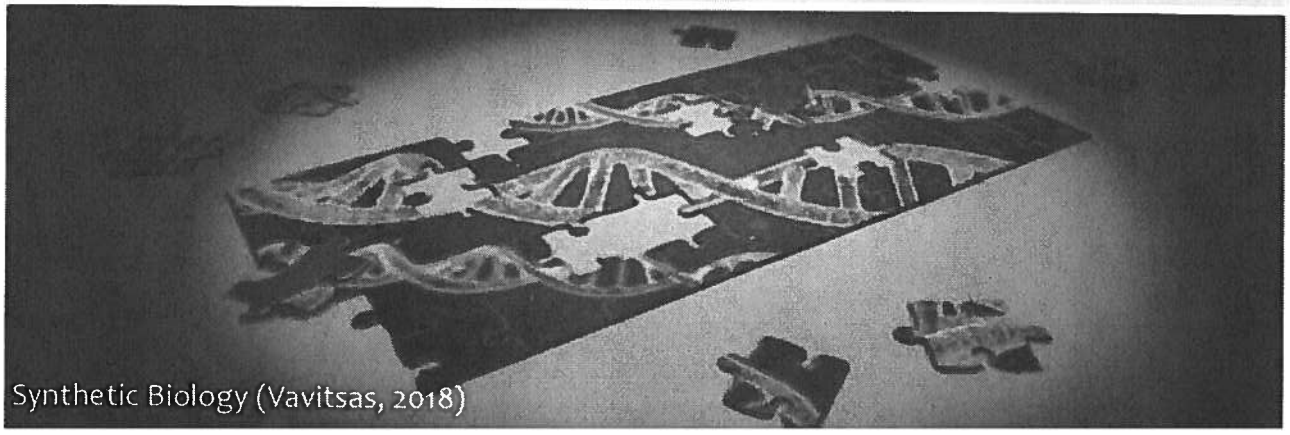
According to European Commission, "Synthetic Biology is the application of science, technology and engineering to facilitate and accelerate the design, manufacture and/or modification of genetic materials in living organisms" (European Commission, 2014).

According to another desciption "Synthetic biology is (i) the design and construction of new biological parts, devices and systems and (ii) the re-design of existing natural biological systems for useful purposes" (www.syntheticbiology.org, 2016).
Through the use of synthehic biology, it is possible to produce goods that are useful for nature and humankind and contribute to the economic development of countries, based on principles of conservation and sustainable use of biodiversity without exhausting biodiversity components.

Producing more effective goods with positive affects on conservation and sustainable use of biodiversity in the fields, where ecosystem services provided such as biofuel, medicine, perfumes and sweeteners, cosmetics, environmental improvement, agriculture is targeted. At the same time, it is possible to protect wildlife, eliminate defrostration and prevent climate change by using synthetic biology (CBD Technical Series, 2015). Therefore, using synthetic biology technique, benefits from ecosystem services can be used efficiently through conservation and sustainable use of biodiversity.

With synthetic biology technique, benefits are ensured effectively from ecosystem services within the framework of conservation and sustainable use of biodiversity via preventing over use of natural resources. Besides, as all emerging technologies, synthetic biology technique as well poses certain risks when not used securely.

Uncontrolled or accidental release of organisms developed with synthetic biology to the environment can lead to negative impacts on biodiversity. Therefore, it is important to develop and apply risk assessment procedures when using the technology.
Prepared by: Biologist (M.S.) Elif SAKALLI (Sakallı, 2016)



Synthetic Biology (Vavitsas, 2018)

5. NATIONAL OBJECTIVE

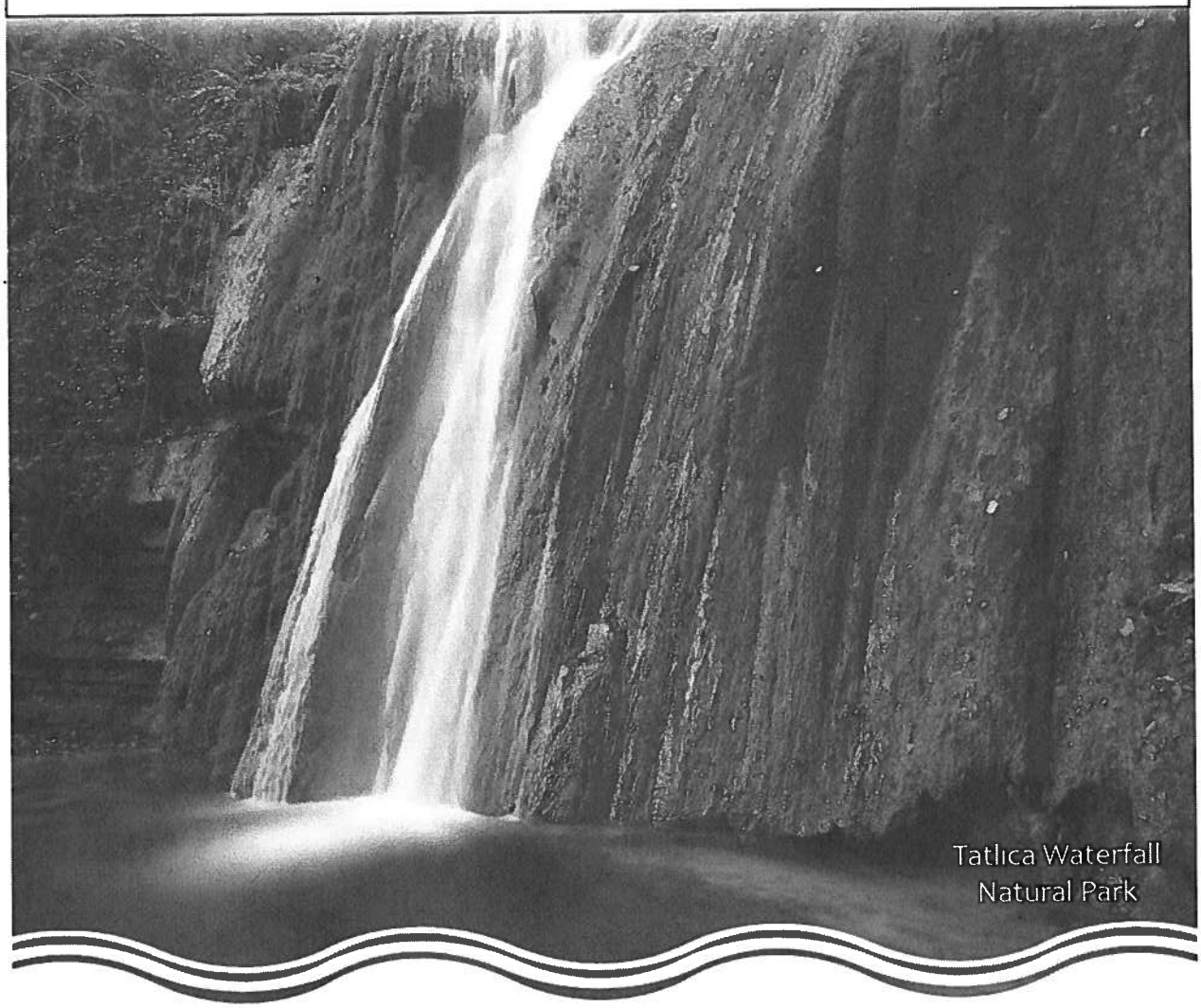
Rehabilitation and restoration of ecosystems damaged due to different reasons will be ensured, measures to prevent damage to healthy ecosystems will be developed and legislative gaps thereon will be fulfilled.

Actions

5.1. Through improving ecosystem-based models, rehabilitation and restoration of degraded ecosystems (marine, forest, wetland etc.) will be provided, monitoring and inspection thereof will be performed.

5.2. Efficient struggle methods (traditional and modern) for the improvement of degraded ecosystems/habitats will be defined, and necessary legislative studies will be conducted.

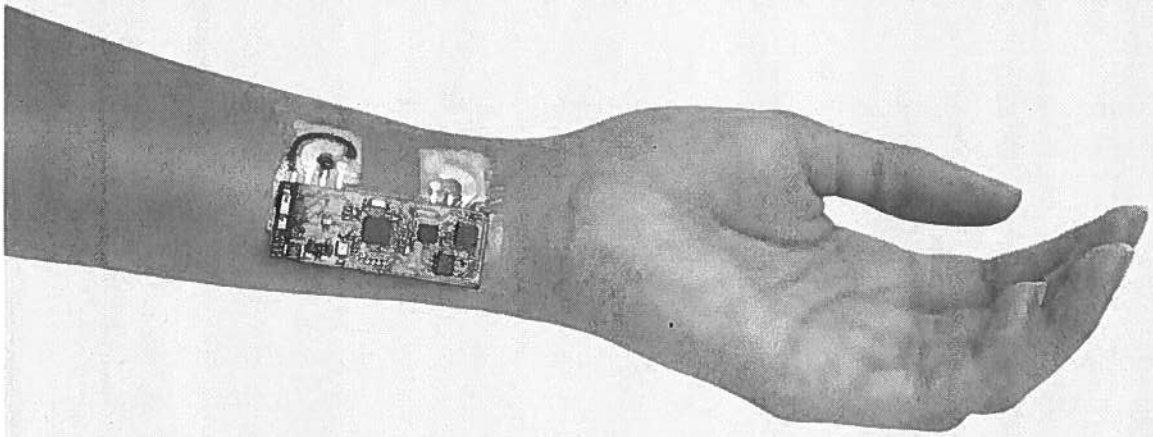
5.3. Alarm systems (biosensors and pollution indicators etc.) will start to be used to warn against the degradation of ecosystem balance in order to provide monitoring in healthy ecosystems.



Tatlıca Waterfall Natural Park

BIOSENSORS

Sense and response mechansims of livings to the changes in their environment have been the basis of development of biosensors (Arshak et al., 2008; Özlem, 2008). Biosensor is a special kind of sensor that is often used for biological analyses and is defined by "International Union of Pure and Applied Chemistry" (IUPAC) as "devices that transform a biological reply to a chemical component to a optical, thermal or electrical signals" (Rasooly, 2005). In recent years, the developments in microelectronics and discovery of extraordinary response capacities of biological molecules have lead to a rapid development of biosensor technologies (Rasooly, 2005; Lazcka vd, 2007). As a consequence; different types of biosensors have been developed to be used in many fields as medicine, pharmaceuticals, food security, environmental pollution and military forces.



Biological molecules (i.e. antibodies, enzymes, proteins, nucleic acid) or biological systems (i.e. cells, tissues and microorganisms) can be used as bioreceptor molecules. The most important feature of molecules to be used as bioreceptors is that they demonstrate high inclination and specificity to the target molecule desired to be detected (Rasooly, 2005).

For example, scientists develop microorganisms to detect and remove the factors leading to environmental pollution such as heavy metals (Thieman ve Palladino, 2013).

Prepared by: Biologist (M.S.) Seda ERDOĞAN (Erdoğan, 2014)

6. NATIONAL OBJECTIVE

In order to develop high added value products based on knowledge and technology concerning conservation and sustainable use of biological resources, coordination mechanism among universities, public and private sectors will be established, and long-term plans and programmes will be prepared.

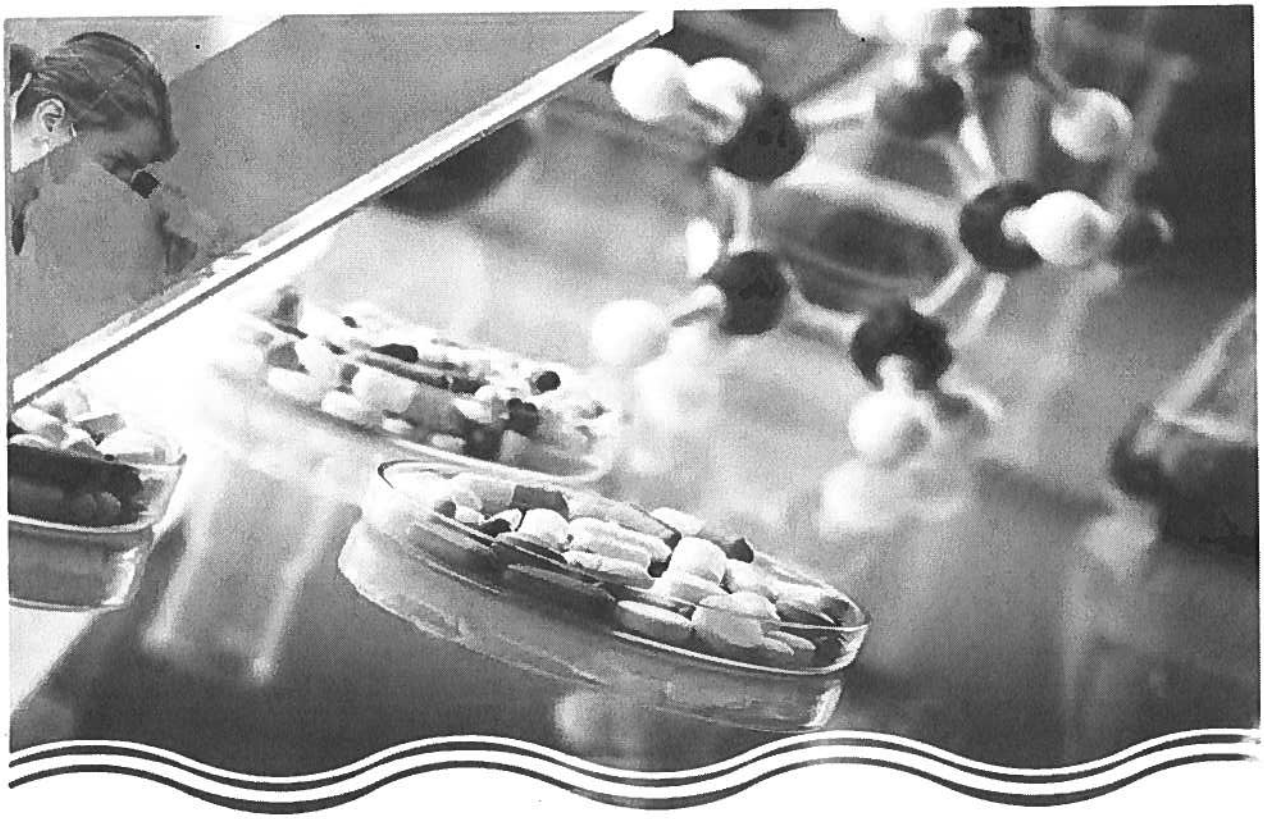
Actions

6.1.Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created.

6.2. The public will be informed on the goods and services developed by using biological resources.

6.3. Training of more specialist on advanced technologies in higher education, working platforms for the researchers in different disciplines to work together will be provided.

6.4. Promotion of producers from public and private sectors (university, institutes, companies etc.) will be ensured in the process of commercializing of the products developed with modern biotechnological methods from the biological resources, in particular those from microorganisms.



7. NATIONAL OBJECTIVE

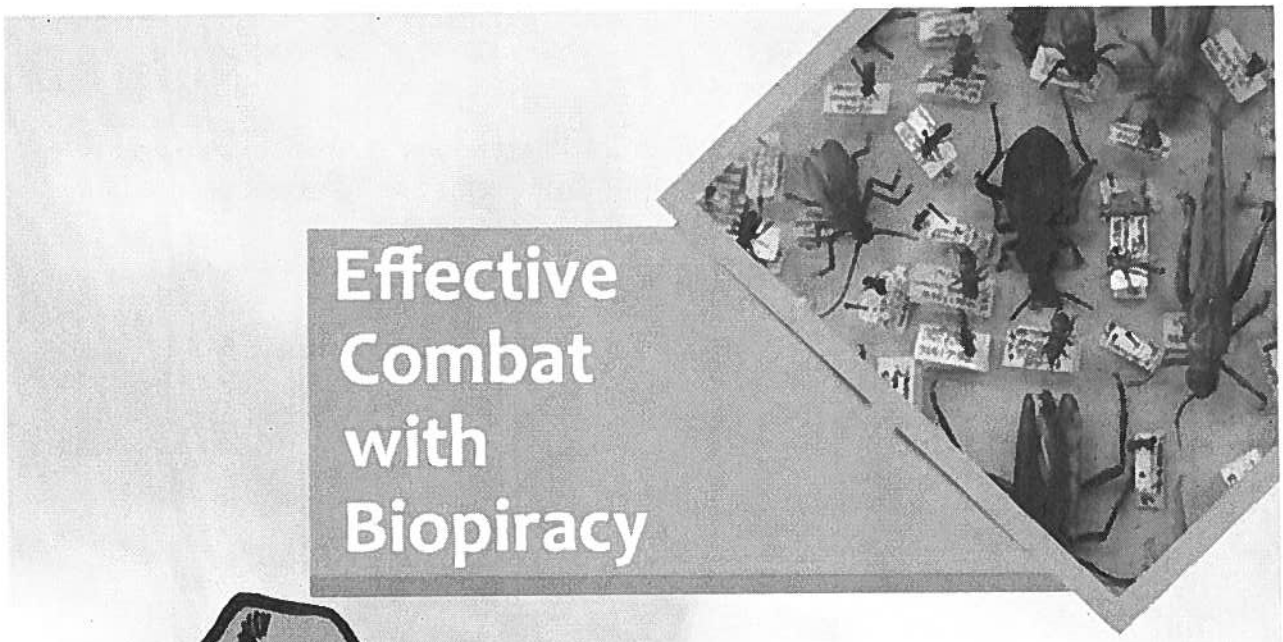
National legislation will be prepared considering the international conventions on access to genetic resources and fair and equitable sharing of the benefits arising from their utilization, and the necessary technical infrastructure will be established.

Actions

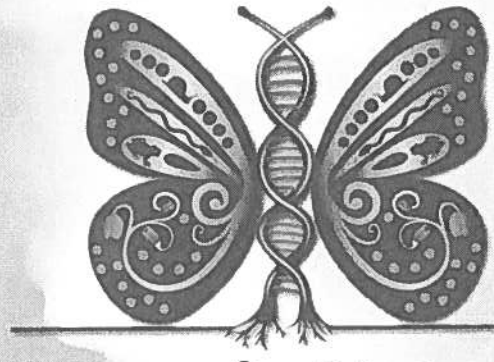
7.1. Studies on regulation of access to traditional knowledge associated with genetic resources and product development using thereof will increasingly be continued.

7.2. Activities for increasing the awareness of the public and related stakeholders on combat against bio smuggling will continue.

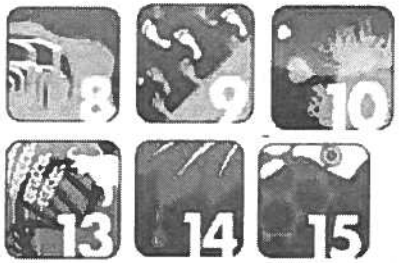
7.3. Studies for preparation and implementation of a legislation on biopiracy will be conducted by creating an inter-institutional coordination.

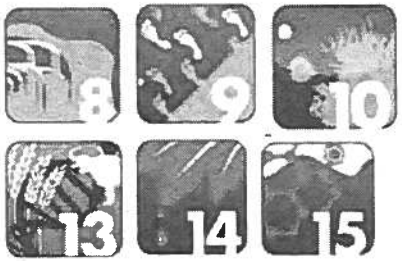


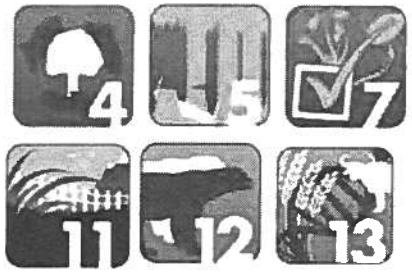
Effective Combat with Biopiracy

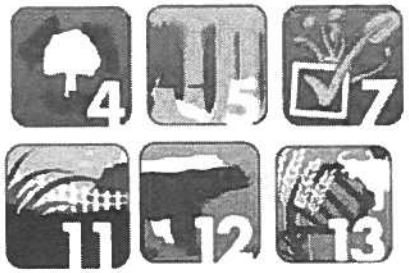
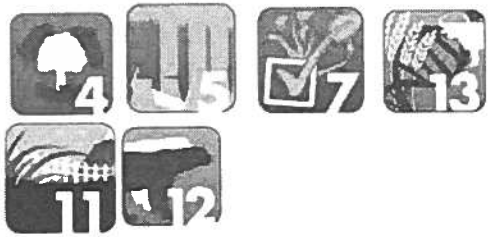


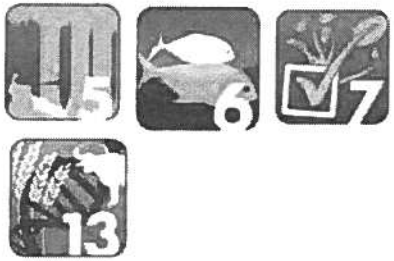
Leave in Nature

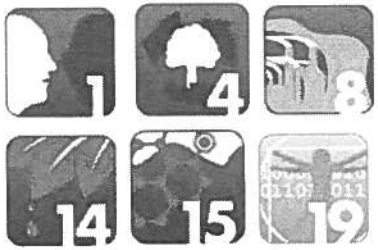
Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals B, C, D 	**NATIONAL OBJECTIVE 1. Pressures and threats on biodiversity and ecosystems will be determined, reduced to the possible lowest level or removed totally.**		Ministry of Agriculture and Forestry	
	Action 1.1. Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Ministry of Environment and Urbanization Universities
	Action 1.2. Studies on improving the measures for identifying, monitoring, and controlling the entrance routes of invasive species and alien species and preventing entrance and habitation thereof will increasingly be continued. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Transport and Infrastructure Ministry of Science and Technology Ministry of Environment and Urbanization Universities

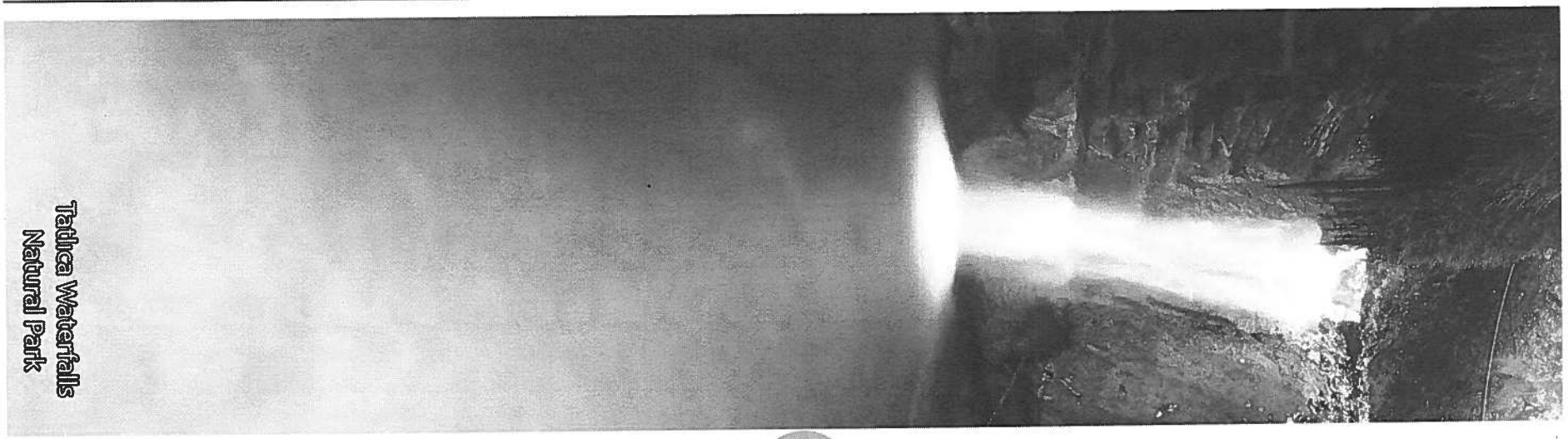
Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals B, C, D 	**Action 1.3.** Potential effects of organisms developed using synthetic biology techniques on conservation and sustainable use of biological diversity will be revealed and via necessary risk assessments, risk evaluation, and monitoring procedures will be developed and legislation regulations will be prepared. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science, Industry and Technology
	Action 1.4. Studies on creating and strengthening GMO monitoring procedures will increasingly be continued in order to prevent their out of purpose usage. 		Ministry of Agriculture and Forestry	Ministry of Science and Technology

Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, B ve C 	NATIONAL OBJECTIVE 2. **Biological diversity components (ecosystem, species and genetic variability) will be determined, monitored, and species specific and ecosystem-based conservation approaches (traditional and modern) will be developed by determining current condition of biodiversity.**		Ministry of Agriculture and Forestry	
	Action 2.1. National biological diversity inventory will be determined and by doing so, current condition of biodiversity will be defined, and species will be registered; DNA Barcoding method will be started to be used within this process. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities
	Action 2.2. Monitoring studies will be performed for the registered national biodiversity data and e-DNA (environmental DNA) monitoring technique will start to be used within the process. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities

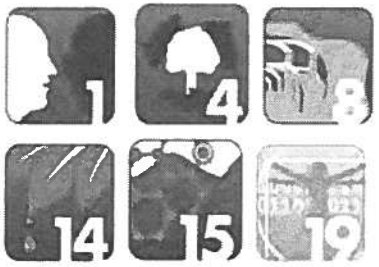
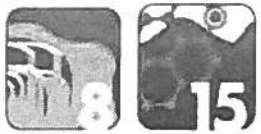
Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, B ve C 	**Action 2.3.** Studies to determine and monitor endemic and endangered species; develop and implement species specific conservation methods will increasingly be continued. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities
	Action 2.4. In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities
	Action 2.5. Studies to detect terrestrial and aquatic microorganisms and to identify them at molecular level to determine their functions in ecosystems will be conducted. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities

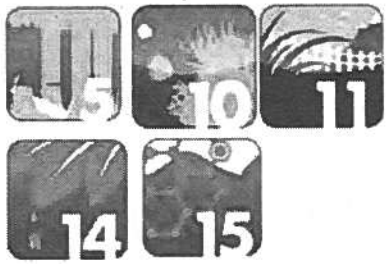
Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals B, C 	**NATIONAL OBJECTIVE 3. Conservation and sustainable management of biodiversity of areas exposed to agriculture, forestry and fishing activities in the country will be ensured.**		Ministry of Agriculture and Forestry	
	Action 3.1. Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Health Ministry of Science and Technology
	Action 3.2. Studies on minimization of pressures and threats to agriculture, forest and fishing will be continued. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Health Ministry of Science and Technology Ministry of Environment and Urbanization

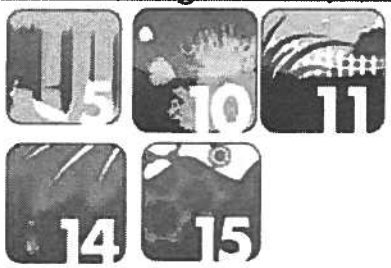
Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, B, D, E 	NATIONAL OBJECTIVE 4. **Awareness of the public and administrators on ecosystem services will be raised, benefits from ecosystem services will be increased and sustainable biodiversity management will be ensured.**		Ministry of Agriculture and Forestry	
	Objective 4.1. Awareness on ecosystem services will be raised among public and private sectors, and training of specialists will be ensured. 	**2018-2028**	Ministry of Agriculture and Forestry	Universities



Tatıca Waterfalls Natural Park

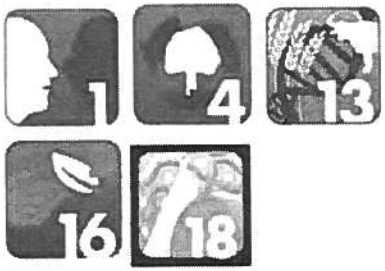
Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, B, D, E 	**Action 4.2.** In order to increase benefits from ecosystem services, studies to reduce the pressures such as pollution (air, water, soil), habitat loss and degradation, global warming, over consumption of natural resources to the lowest level will increasingly be continued. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology
	Action 4.3. In order to utilize ecosystem services effectively, studies for sustainable use of biological diversity will be conducted. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Development Ministry of Environment and Urbanization

Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals B, C, D 	NATIONAL OBJECTIVE 5. **Rehabilitation and restoration of ecosystems damaged due to different reasons will be ensured, measures to prevent damage to healthy ecosystems will be developed and legislative gaps thereon will be fulfilled.**		Ministry of Agriculture and Forestry	
	Action 5.1. Through improving ecosystem-based models, rehabilitation and restoration of degraded ecosystems (marine, forest, wetland etc.) will be provided, monitoring and inspection thereof will be performed. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization Universities
	Action 5.2. Efficient struggle methods (traditional and modern) for the improvement of degraded ecosystems/habitats will be defined, and necessary legislative studies will be conducted. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Ministry of Environment and Urbanization

Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals B, C, D 	**Action 5.3.** Alarm systems (biosensors and pollution indicators etc.) will start to be used to warn against the degradation of ecosystem balance in order to provide monitoring in healthy ecosystems. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities
Global Strategic Goals A, E 	NATIONAL OBJECTIVE 6. **In order to develop high added value products based on knowledge and technology concerning conservation and sustainable use of biological resources, coordination mechanism among universities, public and private sectors will be established, and long-term plans and programmes will be prepared.**		Ministry of Agriculture and Forestry	

Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, E 	**Action 6.1.** Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Development Ministry of Science and Technology Universities
	Action 6.2. The public will be informed on the goods and services developed by using biological resources. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Universities
	Action 6.3. Training of more specialist on advanced technologies in higher education, working platforms for the researchers in different disciplines to work together will be provided. 	**2018-2028**	Ministry of Agriculture and Forestry	Universities

Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, E 	**Action 6.4.** Promotion of producers from public and private sectors (university, institutes, companies etc.) will be ensured in the process of commercializing of the products developed with modern biotechnological methods from the biological resources, in particular those from microorganisms. 	**2018-2028**	Ministry of Agriculture and Forestry	Universities
Global Strategic Goals A, C, D, E 	NATIONAL OBJECTIVE 7. **National legislation will be prepared considering the international conventions on access to genetic resources and fair and equitable sharing of the benefits arising from their utilization, and the necessary technical infrastructure will be established.**		Ministry of Agriculture and Forestry	

Global Strategic Goals (Aichi Goals)	NBAP Objectives and Actions (2018-2028)	Schedule	Responsible Authorities	Related Authorities
Global Strategic Goals A, C, D, E 	**Action 7.1.** Studies on regulation of access to traditional knowledge associated with genetic resources and product development using thereof will increasingly be continued. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Science and Technology Ministry of Culture and Tourism Universities
	Action 7.2. Activities for increasing the awareness of the public and related stakeholders on combat against bio smuggling will continue. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Foreign Affairs Ministry of Interior Affairs Ministry of Justice Ministry of Trade
	Action 7.3. Studies for preparation and implementation of a legislation on biopiracy will be conducted by creating an inter-institutional coordination. 	**2018-2028**	Ministry of Agriculture and Forestry	Ministry of Foreign Affairs Ministry of Interior Affairs Ministry of Justice Ministry of Trade

MONITORING MECHANISM

Conservation and sustainable use of biodiversity consists of actions relevant to many institutions and organizations. Therefore, ensuring coordination is of critical importance. Institutions and organizations dealing with biodiversity directly and indirectly in Turkey are:

- Ministry of Agriculture and Forestry
- Ministry of Environment and Urbanization
- Ministry of Science and Technology
- Ministry of Trade
- Ministry of Interior Affairs
- Ministry of Foreign Affairs
- Ministry of Culture and Tourism
- Ministry of Development
- Ministry of Health
- Ministry of Justice
- Universities

Responsible unit in General Directorate of Nature Conservation and National Parks (NCNP) will coordinate and the coordination secretariat to be defined from within this group will be responsible of the following:

* Monitoring the implementation of the defined policies with regard to the conservation and sustainable use of biological diversity,
* Monitoring the national and international processes for the implementation of National Biodiversity Action Plan,
* Coordination and share of work among the stakeholder institutions/organizations for the performance of implementation, monitoring and reporting of implementation of NBSAP and Convention on Biodiversity,
* Monitoring the studies and reports of sub-working groups that would be established in the case of need.

Establishment of a working group under the chairmanship of General Director of NCNP, National Focal Point of UN Convention on Biodiversity to monitor the implementation status of NBSAP and NBAP objectives in 2018-2028 at a national level is foreseen (Figure 2). The working group is foreseen to be consistent of specialized people from Related Ministries, Research Institutes, Subsidiaries, Main Service Units, technical implementation units of General Directorate of NCNP and relevant institutions and organizations. Furthermore, for a healthy monitoring mechanism, it is important that the specialists assigned for this task to follow the studies in their own relevant institutions on NBSAP/NBAP, and to attend regularly to the meetings taking place under the coordination of General Directorate of NCNP and present the developments. When deemed necessary for the goals and objectives, Sub-Working Groups shall be established. Reports prepared by sub-working groups shall be submitted to coordination secretariat for evaluation.

It is projected that the Coordination Secretariat to be established by General Directorate of NCNP will invite the relevant institutions/ organizations to delegation meetings to be held once a year and monitor the projects and activities carried out in relation to biodiversity, and evaluate the current status of NBSAP and NBAP, and report the recorded developments.

Convention on Biological Diversity

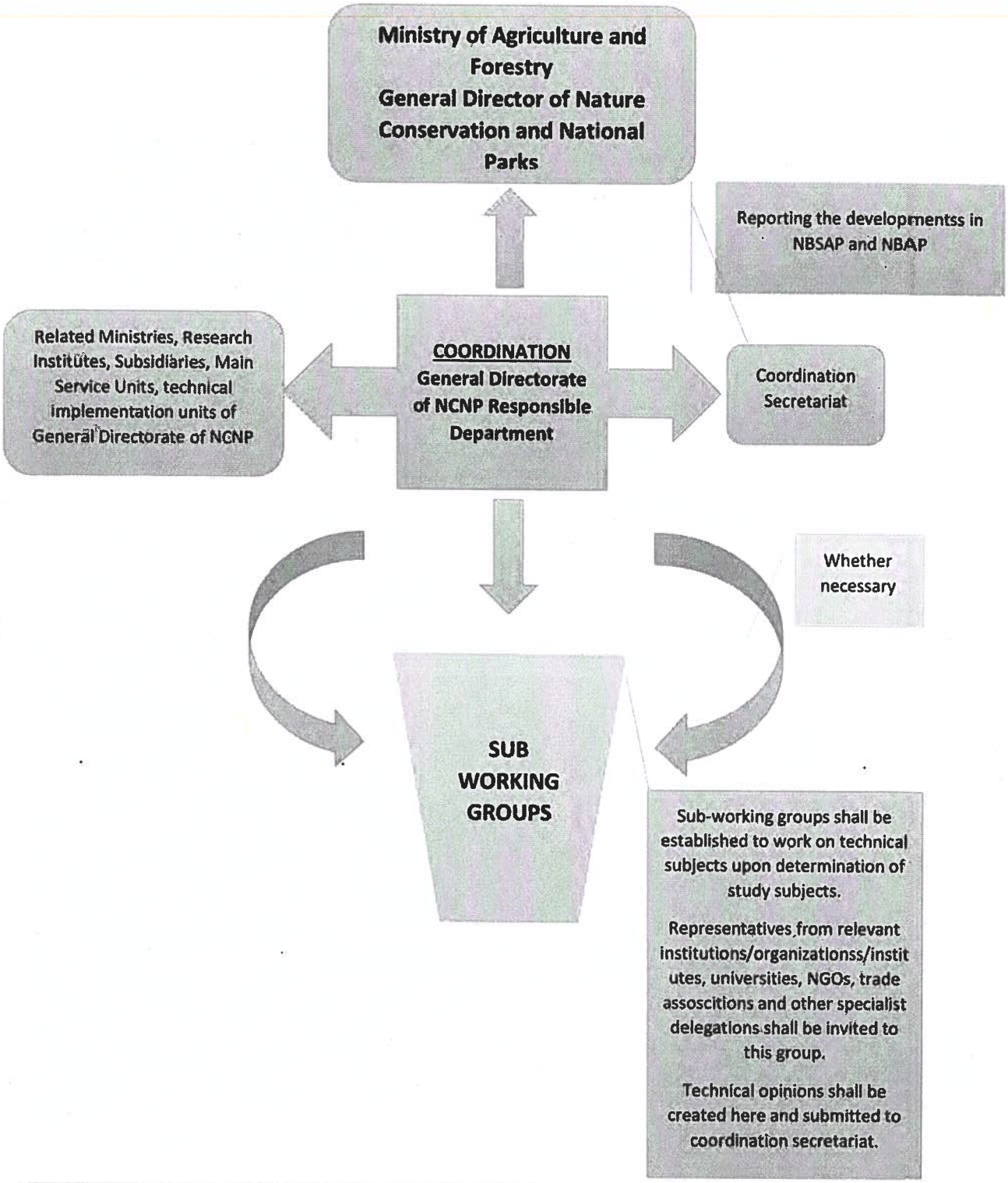
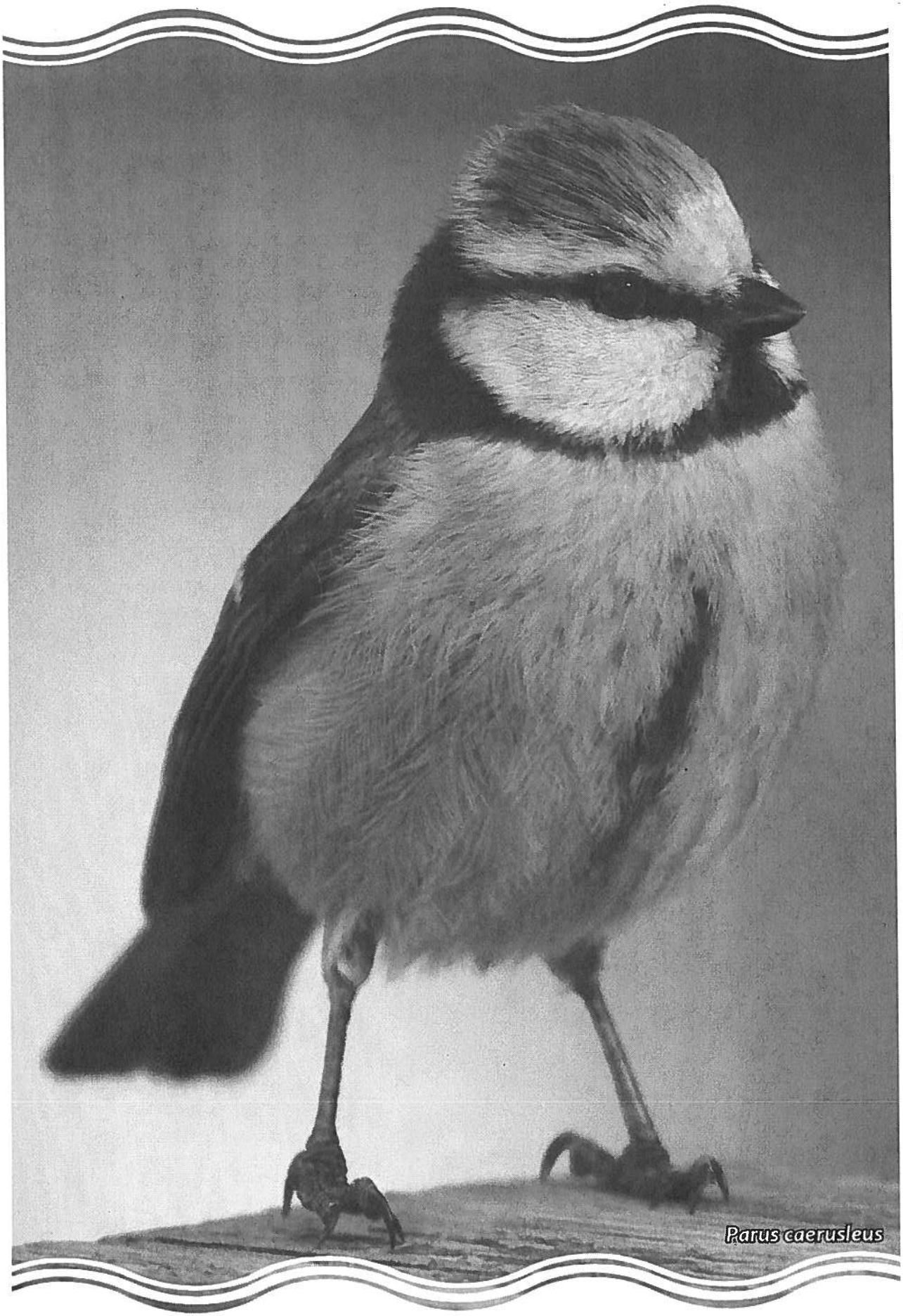


Figure 2. Monitoring Mechanism



Parus caerusleus

Table 7. National Biological Diversity Strategy and Action Plan (2007-2017) Goals and Objectives

NBSAP Goals and Objectives are valid for 2018-2028.

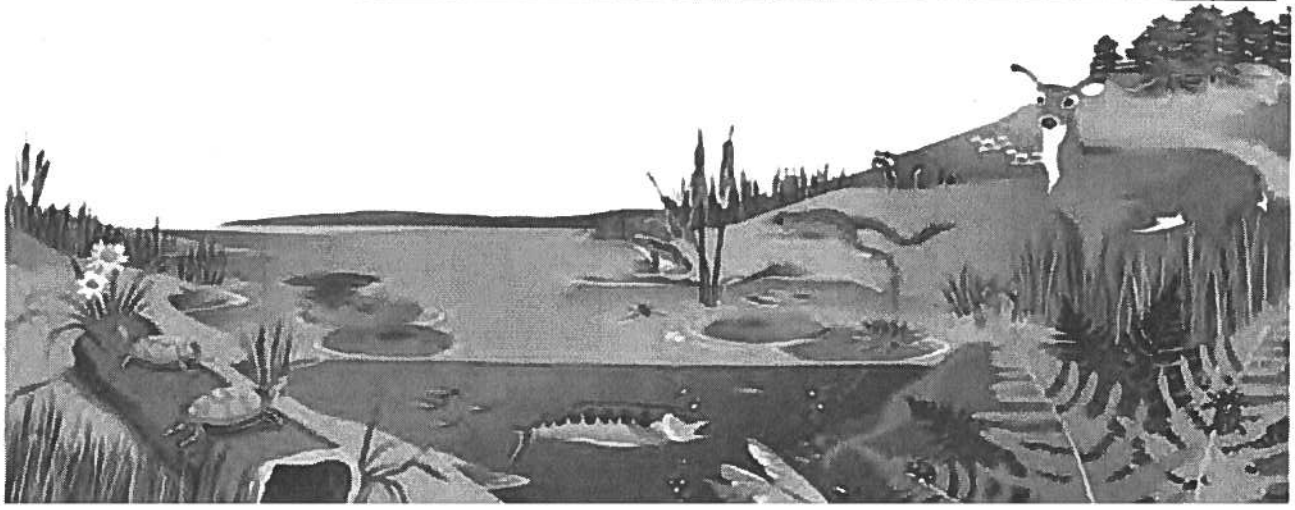
GOAL	OBJECTIVE
1. To identify, protect and monitor biological diversity components which have importance for Turkey	1.1. In order to determine and monitor any changes in ecosystems, species and genetic diversity, to develop and implement biological diversity inventory and monitoring methods and programmes, by considering rapid assessment methods and biological diversity indicators, as well 1.2. To include the less-represented ecosystems, species and genetic diversity centres into protected areas of both terrestrial and aquatic ecosystems, and to achieve an effective protected area management 1.3. To prevent or minimize as far as possible any pressures on and threats to biological diversity
2. To use biological diversity components in a sustainable manner by applying the methods and at a level fi tting to their renewal capacity by taking the future generations' needs into account	2.1. To establish harmony among legal, administrative and institutional regulations and applications having relevance to the conservation of biological diversity and sustainable use of its components 2.2. To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources 2.3. To raise public awareness and sensitivity concerning the conservation and sustainable use of biological diversity
3. To identify, protect and benefit the components of genetic diversity, including the traditional knowledge, which have importance for Turkey	3.1 To identify, record, protect and manage the components of genetic diversity which have importance in terms of biological diversity, agriculture, food and economic value 3.2 To control access to genetic resources and guarantee the sharing of the benefits arising out of the utilization of these resources with Turkey

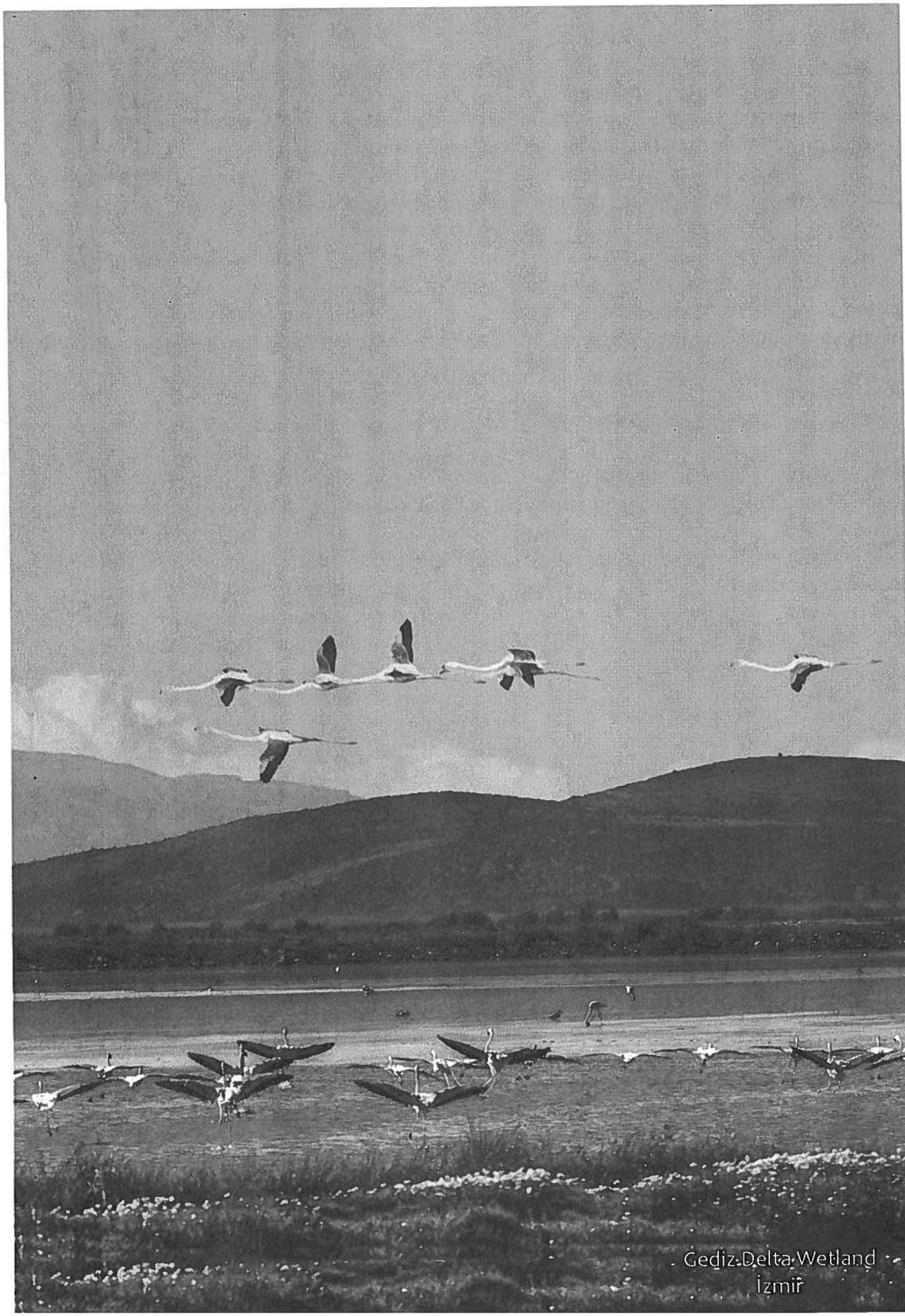
Table 7. National Biological Diversity Strategy and Action Plan (2007-2017) Goals and Objectives

GOAL	OBJECTIVE
4. To identify, protect and monitor the components of biological diversity which have importance for agricultural biological diversity; to protect genetic resources which have actual and potential values for food and agriculture, and to ensure the sustainable use of such resources; and to ensure the fair and equitable sharing of the benefi ts arising out of the utilization of genetic resources	4.1 To identify, protect and monitor the biological diversity elements which have importance for agricultural biological diversity 4.2 To develop management applications and Technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood 4.3. To prevent or minimize as far as possible any pressures on and threats to agricultural biological diversity which come from the genetically modifi ed organisms (GMO's) and the alien species 4.4. To ensure conservation and sustainable use of genetic resources which have actual and potential values for food and agriculture; and to ensure the fair and equitable sharing of the benefi ts from the utilization of genetic resources
5. To protect steppe biological diversity, to ensure the sustainable use of its components, as well as to ensure the fair and equitable sharing of the benefits from the utilization of genetic resources; and to combat against the loss of steppe biological diversity and the socioeconomic results of that	5.1. To fill the information gaps concerning steppe biological diversity 5.2. To identify ecological, physical and social processes such as grazing, drought, desertifi cation, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above 5.3. To establish mechanisms and frameworks in order to support the fair and equitable sharing of the benefi ts from the utilization of the genetic resources of steppe areas
6. To establish an effective monitoring, management and coordination system for the conservation of forest biological diversity and the sustainable use of its components	6.1. To develop and put into practice the monitoring programmes for better evaluation of the status and tendency of forest biological diversity 6.2. To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity

Table 7. National Biological Diversity Strategy and Action Plan (2007-2017) Goals and Objectives

GOAL	OBJECTIVE
7. To establish an effective monitoring, management and coordination system for the conservation and sustainable use of mountain biological diversity, together with its different ecosystems, pursuing a holistic approach	7.1. To effectively implement biological and ecological inventories, monitoring programmes and classification systems 7.2. To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems
8. To develop and implement effective methods for the conservation of inland waters biological diversity, the maintenance of ecological functions of inland waters ecosystems, and the sustainable use of these ecosystems	8.1. To strength technical and institutional capacity for the conservation and sustainable use of inland waters biological diversity 8.2. To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it
9. To develop and implement effective methods for the conservation of coastal and marine biological diversity, the maintenance of ecological functions provided by coastal and marine ecosystems, and the sustainable use of these ecosystems	9.1. To strengthen necessary administrative, legal, institutional and technical capacity for the identifi cation, monitoring, conservation and sustainable use of coastal and marine biological diversity 9.2. To fill the information gaps concerning coastal and marine biological diversity, to identify and put under conservation the areas and species which have importance for biological diversity and are under threat, and to develop and implement monitoring programmes 9.3. To combat against the threats to coastal and marine biological diversity
10. To establish a mechanism for the implementation of the Biological Diversity Strategy and Action Plan and the follow-up of implementation and reporting	10.1. To establish coordination among the relevant institutions as regards the conservation and sustainable use of biological diversity 10.2. To achieve the integrity and sustainability of fi nancial structure for the identifi cation, conservation and sustainable use of biological diversity



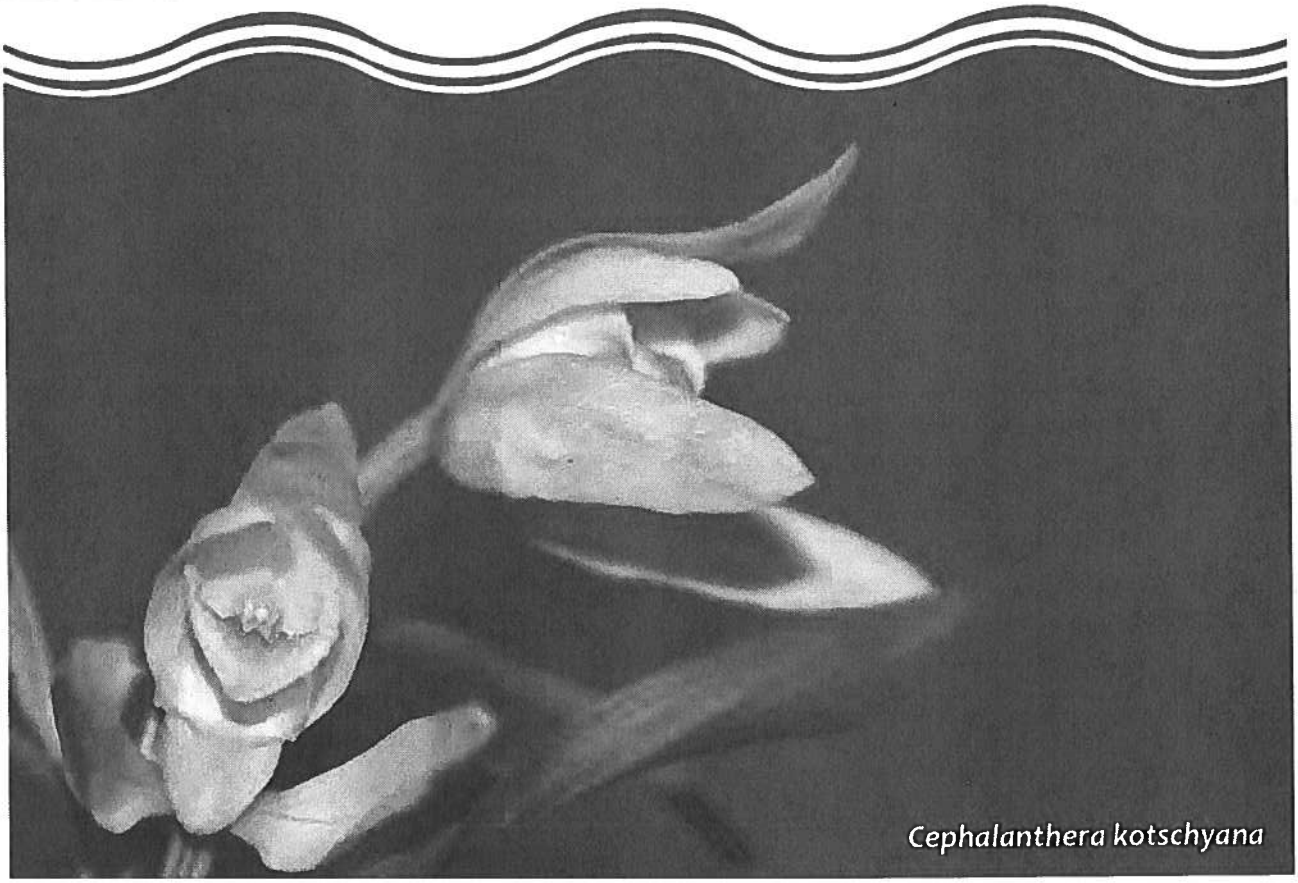


Gediz Delta Wetland
İzmir

Table 8. 2011-2020 Strategic Plan, NBSAP (2007-2017) and NBAP (2018-2028) Harmonization Table

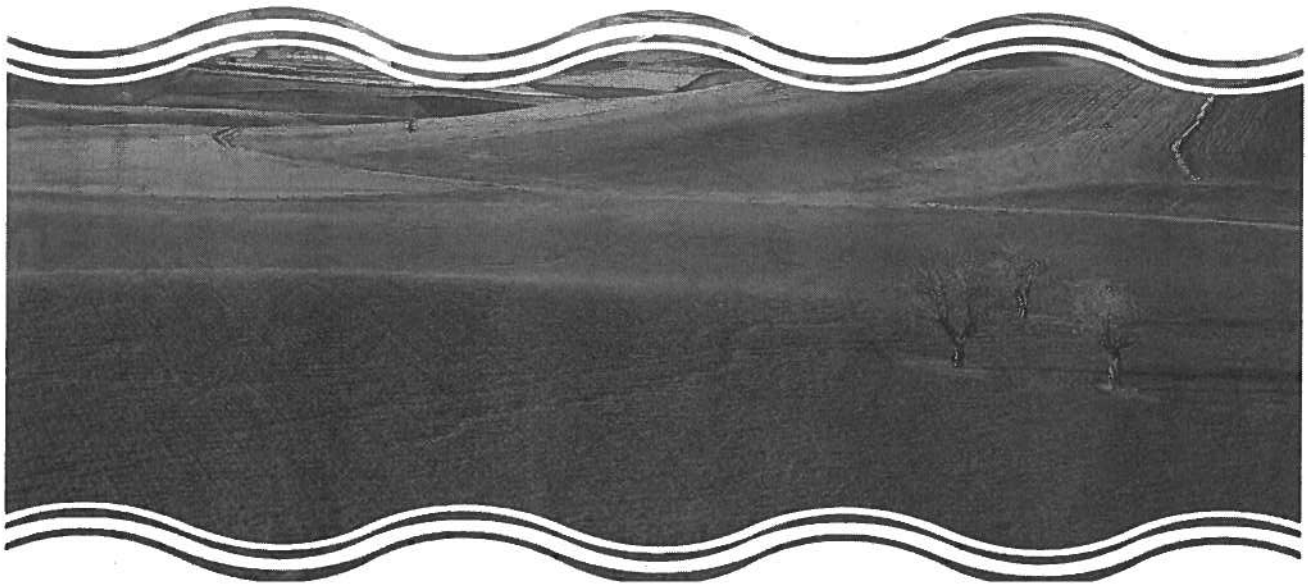
GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	***GOAL 2: To use biological diversity components by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account.***	***NATIONAL OBJECTIVE 4*** ***NATIONAL OBJECTIVE 6*** ***NATIONAL OBJECTIVE 7***
Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably	**Objective 2.3** To raise public awareness and sensitivity concerning the conservation and sustainable use of biological diversity. **2.3.1.** The inclusion of the subjects and texts on biological diversity conservation and the sustainable use of biological resources into the national education curricula. **2.3.4.** The dissemination of the education materials urging those measures that can be taken to prevent or reduce the adverse impacts on ecosystem and biological resources.	**Action 4.1.** Awareness on ecosystem services will be raised among public and private sectors, and training of specialists will be ensured. **Action 6.2.** The public will be informed on the goods and services developed by using biological resources. **Action 7.2.** Activities for increasing the awareness of the public and related stakeholders on combat against bio smuggling will continue.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	**Objective 2.1** To establish harmony among legal, administrative and institutional regulations and applications having relevance to the conservation of biological diversity and sustainable use of its components. **2.1.1.** The identification of any inharmoniousness between biological diversity related legislation and other regulatory measures to eradicate authority chaos and repetitions and to fill the gaps and taking actions to harmonize them. **2.1.6.** The search, development and use of alternative management tools to urge the integration of the Biological Diversity Strategy and Action Plan with development plans and for the integration of social, cultural and economic targets with nature conservation targets and for the sustainable and rational use of water resources.	**Action 6.1.** Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created.



Cephalanthera kotschyana

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, considering national socio-economic conditions.	**2.1.4.** The development and the implementation of appropriate socio-economic policies and incentives as a way of biological diversity conservation, the sustainable use of biological resources and the development of new sustainable use patterns for biological resources. **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood. **4.2.6.** The maintenance, adjustment and improvement of economic incentives for the sustainable use of biological resources and the conservation of biological diversity in agricultural fields. **7.2.2.** The development and implementation of appropriate socio-economic policies and incentives to support sustainable use of mountain ecosystems and of the biological resources of those ecosystems, in particular the high plateaus.	**Action 6.1.** Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created. **Action 6.4.** Promotion of producers from public and private sectors (university, institutes, companies etc.) will be ensured in the process of commercializing of the products developed with modern biotechnological methods from the biological resources, in particular those from microorganisms.



GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, considering national socio-economic conditions.	**8.1.2.** The determination and implementation of incentives for the establishment and operation of sewer system and wastewater treatment plants in the settlement areas close to the sensitive inland water ecosystems and for the expansion of the irrigation methods which ensure the sustainable use of water resources. **9.1.3.** The determination and the implementation of incentive measures which promote the creation of new income-generating resources for those communities who might be affected from the conservation and sustainable use of coastal and marine biological diversity. **9.3.6.** The promotion of the use of appropriate fishing gears and techniques and the implementation of training programmes which will allow the elimination or lowering to an acceptable level of the adverse impacts of fishery on populations, species, habitats and ecosystems.	**Action 6.1.** Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created. **Action 6.4.** Promotion of producers from public and private sectors (university, institutes, companies etc.) will be ensured in the process of commercializing of the products developed with modern biotechnological methods from the biological resources, in particular those from microorganisms.

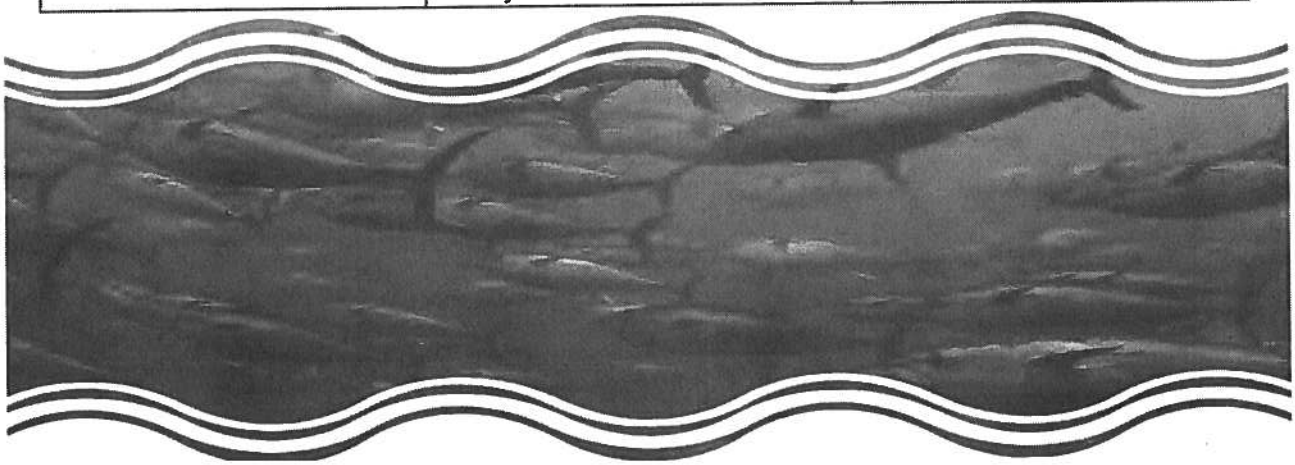


Table 8. 2011-2020 Strategic Plan, NBSAP (2007-2017) and NBAP (2018-2028) Harmonization Table

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	***Objective 2.2*** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. ***Objective 4.2*** To develop mana gement applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood.	**Action 2.4.** In order to conserve biological diversity, studies to develop and implement species specific or ecosystem based conservation approaches by using traditional or advanced biotechnolo gical methods will be conducted. **Action 4.3.** In order to utilize ecosystem services effectively, studies for sustainable use of biological diversity will be conducted.
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use	**GOAL 2: To use biological diversity components in a sustainable manner by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account.**	***NATIONAL OBJECTIVE 1*** ***NATIONAL OBJECTIVE 2*** ***NATIONAL OBJECTIVE 3*** ***NATIONAL OBJECTIVE 4*** ***NATIONAL OBJECTIVE 5***

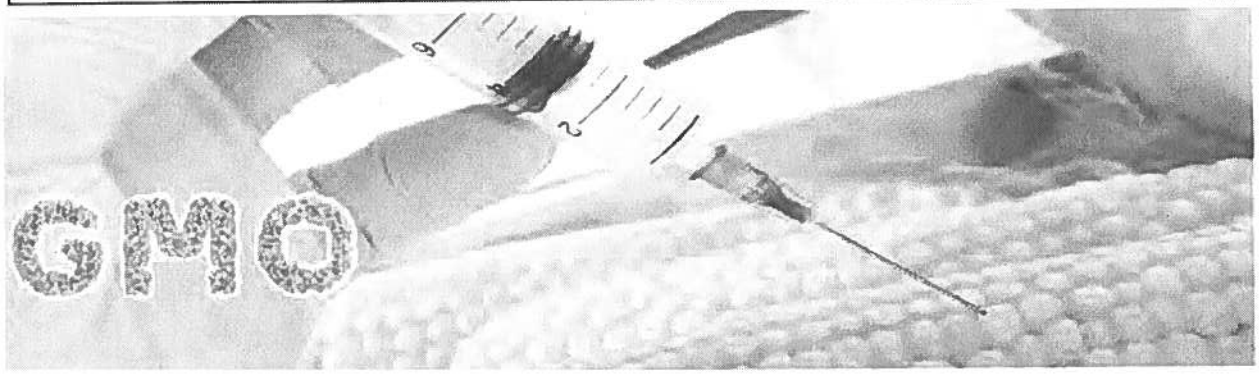
GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	**Objective 1.3** To prevent or minimize as far as possible any pressures on and threats to biological diversity **Objective 2.2** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above. **Objective 6.2** To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity. **Objective 7.2** To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems. **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it **Objective 9.3** To combat against the threats to coastal and marine biological diversity	**Action 2.4.** In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted. **Action 3.2.** Studies on minimization of pressures and threats to agriculture, forest and fishing will be continued. **Action 5.3.** Alarm systems (biosensors and pollution indicators etc.) will start to be used to warn against the degradation of ecosystem balance in order to provide monitoring in healthy ecosystems.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	Objective 9.3 **To combat against the threats to coastal and marine biological diversity** 9.3.6. **The promotion of the use of appropriate fishing gears and techniques and the implementation of training programmes which will allow the elimination or lowering to an acceptable level of the adverse impacts of fishery on populations, species, habitats and ecosystems.**	**Action 3.1.** Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured. **Action 3.2.** Studies on minimization of pressures and threats to agriculture, forest and fishing will be continued.
Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	**Objective 2.2** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood	**Action 2.4.** In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted. **Action 3.1.** Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	**Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above **Objective 6.2** To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity. **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it. **Objective 9.3** To combat against the threats to coastal and marine biological diversity.	**Action 2.4.** In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted. **Action 3.1.** Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured.
Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	**2.2.5.** The development of methods for the prevention of the release into the nature of substances which are harmful to ecosystems, species and genetic resources or the release of those substances in amounts harmful to them, and the support of the attempts towards this **Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood **4.2.1.** The development of methods and measures for the reduction of the impact of excessive and wrong agricultural inputs on the beneficial populations and for more effective agricultural input use, and the implementation of those methods and measures.	**Action 1.1.** Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution. **Action 4.2.** In order to increase benefits from ecosystem services, studies to reduce the pressures such as pollution (air, water, soil), habitat loss and degradation, global warming, over consumption of natural resources to the lowest level will increasingly be continued.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	**Objective 1.3** To prevent or minimize as far as possible any pressures on and threats to biological diversity. **1.3.4.** Taking appropriate legal and institutional measures, including the improvement of human resources, for the identification of the alien species that are introduces or most probably will be introduced into Turkey, the prevention of the introduction of invasive alien species, the determination of any possible adverse impacts of them on biological diversity and the elimination and control of those impacts. **Objective 4.3** To prevent or minimize as far as possible any pressures on and threats to agricultural biological diversity which come from the genetically modified organisms (GMO's) and the alien species. **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it. **8.2.4.** The identification of the reasons of unintentional introduction of alien species, and the submission of solution proposals.	**Action 1.2.** Studies on improving the measures for identifying, monitoring, and controlling the entrance routes of invasive species and alien species and preventing entrance and habitation thereof will increasingly be continued. **Action 1.3.** Potential effects of organisms developed using synthetic biology techniques on conservation and sustainable use of biological diversity will be revealed and via necessary risk assessments, risk evaluation, and monitoring procedures will be developed, and legislation regulations will be prepared. **Action 1.4.** Studies on creating and strengthening GMO monitoring procedures will increasingly be continued in order to prevent their out of purpose usage.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	**8.2.5.** Setting up a national database which will help the identification of the introduction of any potential harmful alien species and allow the foreseeing of them in advance and promoting the efforts to allow access to the international databases in order to be able to devise methods for control and prevention. **8.2.6.** The elimination or lowering to an acceptable level of the adverse impacts of alien species introduced by fisheries harvest projects, fish farms, development programmes and the transfer of waters and species between basins. **8.2.7.** The reviewing of laws and regulations concerning the introduction of alien species in ecosystems. **Objective 9.3** To combat against the threats to coastal and marine biological diversity. **9.3.5.** The examination of the impacts of alien species on marine biological diversity and taking measures to prevent any adverse impacts.	**Action 1.2.** Studies on improving the measures for identifying, monitoring, and controlling the entrance routes of invasive species and alien species and preventing entrance and habitation thereof will increasingly be continued. **Action 1.3.** Potential effects of organisms developed using synthetic biology techniques on conservation and sustainable use of biological diversity will be revealed and via necessary risk assessments, risk evaluation, and monitoring procedures will be developed, and legislation regulations will be prepared. **Action 1.4.** Studies on creating and strengthening GMO monitoring procedures will increasingly be continued in order to prevent their out of purpose usage.



GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	**1.3.7.** The identification of the impacts of climate change on biological diversity, the monitoring of those impacts, and taking measures to protect the most affected ecosystems and species **7.2.1.** The identification of the adverse impacts of the key threats to mountain biological diversity like climate change and the determination of measures either to prevent or to mitigate such impacts. **9.3.3.** The identification and monitoring of the impacts of climate change in Turkey's seas using remote sensing methods.	**Action 1.1.** Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution. **Action 5.3.** Alarm systems (biosensors and pollution indicators etc.) will start to be used to warn against the degradation of ecosystem balance in order to provide monitoring in healthy ecosystems.
Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	GOAL 1: **To identify, protect and monitor biological diversity components which have importance for Turkey.**	***NATIONAL OBJECTIVE 1*** ***NATIONAL OBJECTIVE 2*** ***NATIONAL OBJECTIVE 3*** ***NATIONAL OBJECTIVE 5*** ***NATIONAL OBJECTIVE 7***

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	**Objective 1.2** To include the less-represented ecosystems, species and genetic diversity centres into protected areas of both terrestrial and aquatic ecosystems, and to achieve an effective protected area management. ***Objective 2.2*** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. **Objective 7.2** To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems. **Objective 9.2** To fill the information gaps concerning coastal and marine biological diversity, to identify and put under conservation the areas and species which have importance for biological diversity and are under threat, and to develop and implement monitoring programmes.	**Action 2.4.** In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted. **Action 5.3.** Alarm systems (biosensors and pollution indicators etc.) will start to be used to warn against the degradation of ecosystem balance in order to provide monitoring in healthy ecosystems.


Kaçkar Mountains National Park

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	**Objective 1.1 In order to determine and monitor any changes in ecosystems, species and genetic diversity, to develop and implement biological diversity inventory and monitoring methods and programmes, by considering rapid assessment methods and biological diversity indicators, as well.** **Objective 1.3** The identification of reliable and economic biological diversity inventory methods and Technologies. **1.3.3.** The development of rehabilitation programmes, techniques and technologies for the species either endangered or under threat, or for the degraded ecosystems, using such objective criteria as the ecological and habitat needs of the species at risk, and the implementation of the above and evaluation of their success. ***Objective 2.2*** To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources. **Objective 4.1** To identify, protect and monitor the biological diversity elements which have importance for agricultural biological diversity.	**Action 2.1.** National biological diversity inventory will be determined and by doing so, current condition of biodiversity will be defined and species will be registered; DNA Barcoding method will be started to be used within this process. **Action 2.2.** Monitoring studies will be performed for the registered national biodiversity data and e-DNA (environmental DNA) monitoring technique will start to be used within the process. **Action 2.3.** Studies to determine and monitor endemic and endangered species; develop and implement species specific conservation methods will increasingly be continued. **Action 2.4. In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted.** Action 2.5. **Studies to detect terrestrial and aquatic microorganisms and to identify them at molecular level to determine their functions in ecosystems will be conducted.**

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	**Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above. **Objective 7.1** To effectively implement biological and ecological inventories, monitoring programmes and classification systems. **Objective 9.2** To fill the information gaps concerning coastal and marine biological diversity, to identify and put under conservation the areas and species which have importance for biological diversity and are under threat, and to develop and implement monitoring programmes.	**Action 2.1.** National biological diversity inventory will be determined and by doing so, current condition of biodiversity will be defined and species will be registered; DNA Barcoding method will be started to be used within this process. **Action 2.2.** Monitoring studies will be performed for the registered national biodiversity data and e-DNA (environmental DNA) monitoring technique will start to be used within the process. **Action 2.3.** Studies to determine and monitor endemic and endangered species; develop and implement species specific conservation methods will increasingly be continued. **Action 2.4. In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted.** **Action 2.5.** Studies to detect terrestrial and aquatic microorganisms and to identify them at molecular level to determine their functions in ecosystems will be conducted.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
***Target* 13:** By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	**GOAL 3.** To identify, protect and benefit the components of genetic diversity, including the traditional knowledge, which have importance for Turkey. **Objective 3.1** To identify, record, protect and manage the components of genetic diversity which have importance in terms of biological diversity, agriculture, food and economic value. **Objective 4.4 To ensure conservation and sustainable use of genetic resources which have actual and potential values for food and agriculture; and to ensure the fair and equitable sharing of the benefits from the utilization of genetic resources.** **Objective 5.3** To establish mechanisms and frameworks in order to support the fair and equitable sharing of the benefits from the utilization of the genetic resources of steppe areas.	**Action 1.1.** Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution. **Action 2.1.** National biological diversity inventory will be determined and by doing so, current condition of biodiversity will be defined and species will be registered; DNA Barcoding method will be started to be used within this process. **Action 2.4.** In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted. **Action 3.1.** Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured. **Action 7.1.** Studies on regulation of access to traditional knowledge associated with genetic resources and product development using thereof will increasingly be continued.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services	**GOAL 2:** To use biological diversity components by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account. **GOAL 3.** To identify, protect and benefit the components of genetic diversity, including the traditional knowledge, which have importance for Turkey.	***NATIONAL OBJECTIVE 1*** ***NATIONAL OBJECTIVE 4*** ***NATIONAL OBJECTIVE 5*** ***NATIONAL OBJECTIVE 7***
Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	**Objective 4.2** To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood. **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above. **Objective 6.2** To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity. **Objective 7.2** To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems. **Objective 8.2** To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it. **Objective 9.3** To combat against the threats to coastal and marine biological diversity.	**Action 1.1.** Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution. **Action 4.3.** In order to utilize ecosystem services effectively, studies for sustainable use of biological diversity will be conducted. **Action 5.1.** Through improving ecosystem-based models, rehabilitation and restoration of degraded ecosystems (marine, forest, wetland etc.) will be provided, monitoring and inspection thereof will be performed.

Table 8. 2011-2020 Strategic Plan, NBSAP (2007-2017) and NBAP (2018-2028) Harmonization Table

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	**1.3.7.** The identification of the impacts of climate change on biological diversity, the monitoring of those impacts, and taking measures to protect the most affected ecosystems and species **Objective 5.2** To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above.	**Action 1.1.** Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution. **Action 4.2.** In order to increase benefits from ecosystem services, studies to reduce the pressures such as pollution (air, water, soil), habitat loss and degradation, global warming, over consumption of natural resources to the lowest level will increasingly be continued. **Action 5.1.** Through improving ecosystem-based models, rehabilitation and restoration of degraded ecosystems (marine, forest, wetland etc.) will be provided, monitoring and inspection thereof will be performed. **Action 5.2.** Efficient struggle methods (traditional and modern) for the improvement of degraded ecosystems/habitats will be defined, and necessary legislative studies will be conducted.

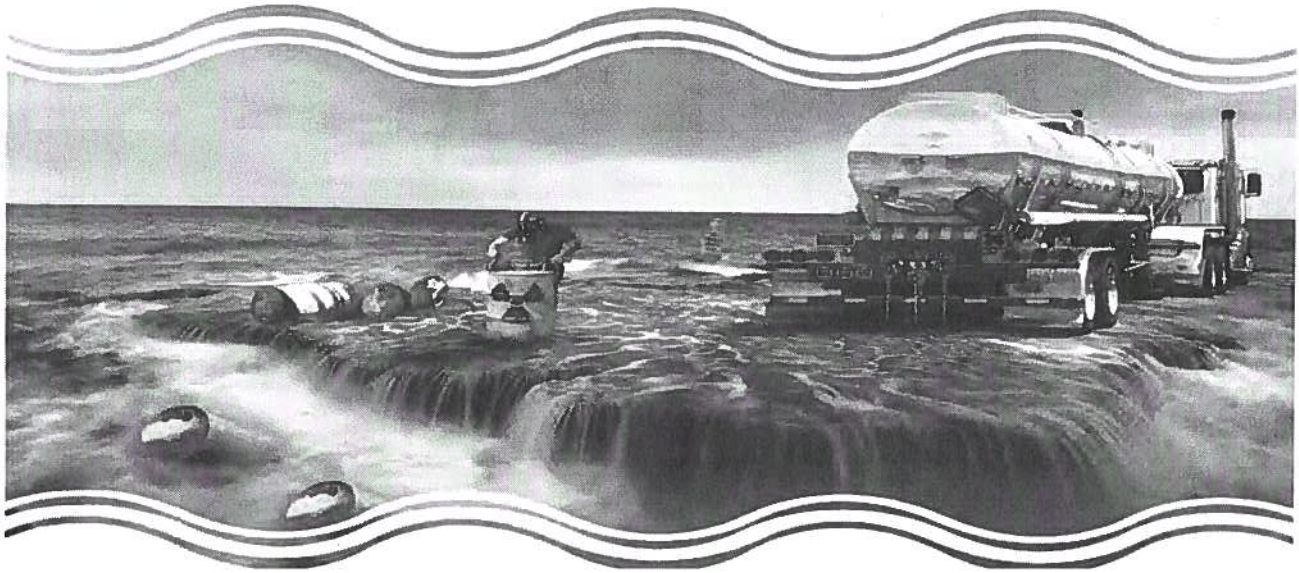


Table 8. 2011-2020 Strategic Plan, NBSAP (2007-2017) and NBAP (2018-2028) Harmonization Table

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	**Objective 3.2** To control access to genetic resources and guaran tee the sharing of the benefits arising out of the utilization of these resources with Turkey.	***Target 16:*** By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.
Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building	**GOAL 10.** To establish a mechanism for the implementation of the Biological Diversity Strategy and Action Plan and the follow-up of implementation and reporting.	***Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building***
Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	**GOAL 10.** To establish a mechanism for the implementation of the Biological Diversity Strategy and Action Plan and the follow-up of implementation and reporting.	***Target 17:*** By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.
Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.		**Action 7.1.** Studies on regulation of access to traditional knowledge associated with genetic resources and product development using thereof will increasingly be continued.

GLOBAL STRATEGIC GOALS (AICHI GOALS)	NBSAP (2007-2017)	NBAP (2018-2028)
Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	**Objective 10.1** To establish coordination among the relevant institutions as regards the conservation and sustainable use of biological diversity.	**Action 4.1.** Awareness on ecosystem services will be raised among public and private sectors, and training of specialists will be ensured. **Action 6.1.** Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created. **Action 7.1.** Studies on regulation of access to traditional knowledge associated with genetic resources and product development using thereof will increasingly be continued.
Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	**Objective 10.2** To achieve the integrity and sustainability of financial structure for the identification, conservation and sustainable use of biological diversity.	

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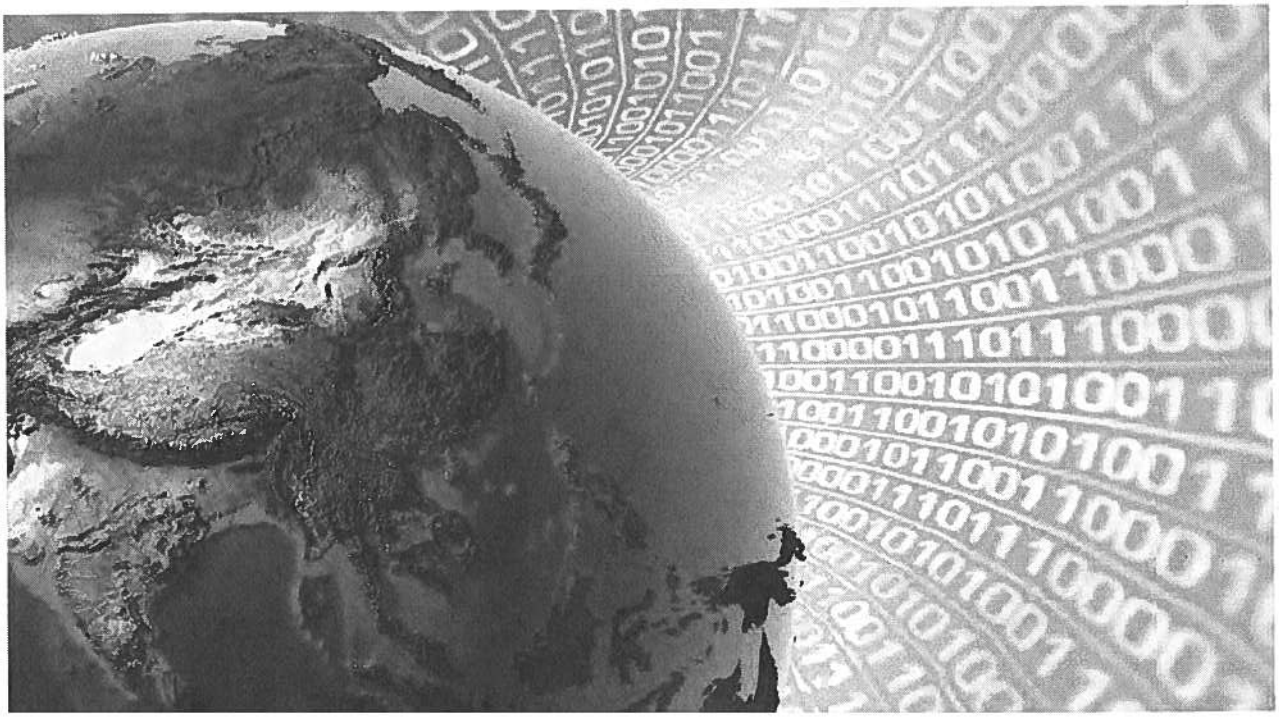
NBAP (2018-2028)	INDICATORS
NATIONAL OBJECTIVE 1. Pressures and threats on biodiversity and ecosystems will be determined, reduced to the possible lowest level or removed totally.	
Action 1.1. Struggle strategies will be continued to be improved against direct or indirect pressures on biological diversity such as habitat loss and degradation, global warming, increase of population, over consumption of natural resources, genetic erosion and pollution.	*Projects and studies for determined threats
Action 1.2. Studies on improving the measures for identifying, monitoring, and controlling the entrance routes of invasive species and alien species and preventing entrance and habitation thereof will increasingly be continued.	*Number of invasive alien species (Terrestrial and Marine) *Monitored invasive species
Action 1.3. Potential effects of organisms developed using synthetic biology techniques on conservation and sustainable use of biological diversity will be revealed and via necessary risk assessments, risk evaluation, and monitoring procedures will be developed and legislation regulations will be prepared.	*Organisms developed using synthetic biology * Monitoring procedures for organisms developed using synthetic biology *Number and type of legislations
Action 1.4. Studies on creating and strengthening GMO monitoring procedures will increasingly be continued in order to prevent their out of purpose usage.	*GMO type that is monitored and new developed monitoring methods, if exists
NATIONAL OBJECTIVE 2. Biological diversity components (ecosystem, species and genetic variability) will be determined, monitored, and species specific and ecosystem-based conservation approaches (traditional and modern) will be developed by determining current condition of biodiversity.	
Action 2.1. National biological diversity inventory will be determined and by doing so, current condition of biodiversity will be defined and species will be registered; DNA Barcoding method will be started to be used within this process.	*Number of registered species through National Biodiversity Inventory and Monitoring Project *State of populations of species under IUCN threat category (CR, EN, VU) *State of population of local and local endemic species *Number of species registered through DNA Barcoding method

Table 9.
NBAP 2018-2028 Achievement Indicators

NBAP (2018-2028)	INDICATORS
Action 2.2. Monitoring studies will be performed for the registered national biodiversity data and e-DNA (environmental DNA) monitoring technique will start to be used within the process	*Number of species to be monitored and state thereof under IUCN threat category * Monitoring of population status of endemic and local endemic species
Action 2.3. Studies to determine and monitor endemic and endangered species; develop and implement species specific conservation methods will increasingly be continued.	*Number of species protected *ex situ* and *in situ* *Species action plans * Population status of endemic and endangered species
Action 2.4. In order to conserve biological diversity, studies to develop and implement species specific or ecosystem-based conservation approaches by using traditional or advanced biotechnological methods will be conducted.	*Species specific pilot studies *Ecosystem based field studies
Action 2.5. Studies to detect terrestrial and aquatic microorganisms and to identify them at molecular level to determine their functions in ecosystems will be conducted.	*Number of detected microbial species *Detected functions of species in the ecosystem
NATIONAL OBJECTIVE 3. Conservation and sustainable management of biodiversity of areas exposed to agriculture, forestry and fishing activities in the country will be ensured.	
Action 3.1. Conservation and sustainable management of biodiversity creating sources for industries of agriculture, forest, food and medicine will be ensured.	* Biodiversity creating sources for industries of agriculture, forest, food and medicine and their population status
Action 3.2. Studies on minimization of pressures and threats to agriculture, forest and fishing will be continued.	* Projects and studies for the determined threats
NATIONAL OBJECTIVE 4. Awareness of the public and administrators on ecosystem services will be raised, benefits from ecosystem services will be increased and sustainable biodiversity management will be ensured.	
Action 4.1. Awareness on ecosystem services will be raised among public and private sectors, and training of specialists will be ensured.	*Number of specialists trained on ecosystem services (masters/PhD) * Institutions providing education on ecosystem services

NBAP (2018-2028)	INDICATORS
Action 4.2. In order to increase benefits from ecosystem services, studies to reduce the pressures such as pollution (air, water, soil), habitat loss and degradation, global warming, over consumption of natural resources to the lowest level will increasingly be continued.	*Number and type of projects/studies to be conducted
Action 4.3. In order to utilize ecosystem services effectively, studies for sustainable use of biological diversity will be conducted.	* Number and type of projects/studies to be conducted
NATIONAL OBJECTIVE 5. Rehabilitation and restoration of ecosystems damaged due to different reasons will be ensured, measures to prevent damage to healthy ecosystems will be developed and legislative gaps thereon will be fulfilled.	
Action 5.1. Through improving ecosystem-based models, rehabilitation and restoration of degraded ecosystems (marine, forest, wetland etc.) will be provided, monitoring and inspection thereof will be performed.	* Number and type (protected, vulnerable etc.) of areas *Number of rehabilitated/restored areas *Number of monitored areas
Action 5.2. Efficient struggle methods (traditional and modern) for the improvement of degraded ecosystems/habitats will be defined, and necessary legislative studies will be conducted.	*Type and number of legislations * Number and type of projects/studies to be conducted
Action 5.3. Alarm systems (biosensors and pollution indicators etc.) will start to be used to warn against the degradation of ecosystem balance in order to provide monitoring in healthy ecosystems.	* Number and type of projects/studies to be conducted
NATIONAL OBJECTIVE 6. In order to develop high added value products based on knowledge and technology concerning conservation and sustainable use of biological resources, coordination mechanism among universities, public and private sectors will be established, and long-term plans and programmes will be prepared.	
Action 6.1. Development of institutional capacity, innovation, infrastructure facility, necessary technology transfer and incentives will be provided and road maps for emerging technologies will be determined and necessary legislation accordingly will be created.	*Type and number of legislations
Action 6.2. The public will be informed on the goods and services developed by using biological resources.	* Number and type of projects/studies to be conducted * TV programmes, radio programmes, symposiums, panels and conferences on the subject

NBAP (2018-2028)	INDICATORS
Action 6.3. Training of more specialist on advanced technologies in higher education, working platforms for the researchers in different disciplines to work together will be provided	*Number of specialists trained on advanced technologies in public institutions (master/PhD)
Action 6.4. Promotion of producers from public and private sectors (university, institutes, companies etc.) will be ensured in the process of commercializing of the products developed with modern biotechnological methods from the biological resources, in particular those from microorganisms.	* Projects granted with incentives and approximate cost *Patented biological diversity products
NATIONAL OBJECTIVE 7. National legislation will be prepared taking into account the international conventions on access to genetic resources and fair and equitable sharing of the benefits arising from their utilization, and the necessary technical infrastructure will be established.	
Action 7.1. Studies on regulation of access to traditional knowledge associated with genetic resources and product development using thereof will increasingly be continued.	* Number and type of projects/studies to be conducted
Action 7.2. Activities for increasing the awareness of the public and related stakeholders on combat against bio smuggling will continue.	* Number and type of projects/studies to be conducted * TV programmes, radio programmes, symposiums, panels and conferences on these subjects
Action 7.3. Studies for preparation and implementation of a legislation on biopiracy will be conducted by creating an inter-institutional coordination.	* Type and number of legislations * Number and type of projects/studies to be conducted



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