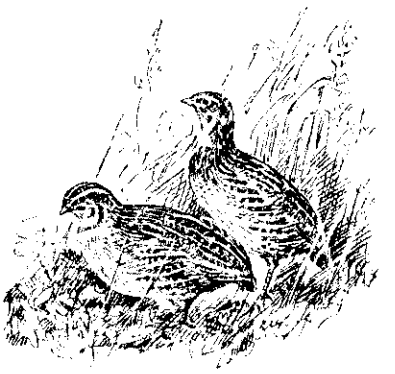


5.2.2.8. Agroecosystems

Integration of agricultural production into natural territorial complexes leads to the formation of agroecosystems which replace former natural ecosystems. Extensive use of chemical products and industrial technologies in agriculture throughout the second part of the 20th century has led to a marked decline of biodiversity, loss of ecological stability, disturbance or destruction of historically and ecologically valuable natural-cultural complexes.

Consolidation of rural settlements in the 1960s-1970s gave rise to new developments, such is intensified farming in the core parts of new large agrucultural enterprises and reduced exploitation of their marginal portions. As a result, peripheral fields and meadows soon became overgrown by the tree and bush vegetation. In the end, part of biodiversity of traditional ecologically-balanced natural-cultural complexes was lost.

A large part of Russia's population live in countryside, and the bulk of food production comes thereof. Hence, the primary objectives of conservation and restoration of biodiversity are as follows:

– maximum enhancement of the ability of ecosystems for biocenotic self-regulation, minimization of their dependence on human management for the maintenace of ecological stability;
– promotion of ecological safety;
– maintenance of agricultural productivity;
– formation of healthy and comfortable human environment.

Major threats to biodiversity of agroecosystems

Extensive use of chemical products and industrial technologies having the following repercussions.

- Excessive application of fertilizers, pesticides, and other chemical products.
- Pollution by effluents from cattle and poultry farms.
- Unification of agricultural techniques without regard for the diversity of regional and local conditions.
- Maintenance of only few highly productive species, varieties, and breeds; disappearance of local breeds and varieties.
- Appearance of vast monotonous stretches of agricultural land.
- Soil erosion and dehumification, loss of soil fertility and diversity of soil ecosystems.

Priority measures for conservation of biodiversity of agroecosystems

Of primary importance is the transition from the extensive use of chemicals and industrial technologies to the adaptive, evolutionary and ecologically-sound agricultural production.

- Conservation of the remaining natural ecosystems, animal and plant species, ecologically-balanced natural-cultural complexes.
- Optimization of the proportion of natural and anthropogenic elements in agrolandscapes; maintenance of the integrity of natural ecosystems and ecologically balanced natural-cultural complexes by preventing their fragmentation and establishing ecological corridors connecting them.
- Development of agroecosystems on the principle of biocenotic self-regulation with the maximum closeness of biogeochemical turnover.
- Strengthening of environmentally friendly aspects of agroecosystems and their resource-restoring function.
- Conservation and restoration of traditional ecologically-balanced natural-cultural complexes and agrolandscapes.
- Consideration of the diversity of regional and local conditions and the use of relevant methods of agricultural production, breeds and varieties of animals and plants, optimal combination of various lands (fields, meadows, forest belts, groves, etc.).
- Conservation of the diversity of animal breeds and plant varieties adapted to specific local conditions as a part of cultural heritage of a given region.
- Reconstruction of historico-ecological centres of land reclamation and cattle breeding.
- Promoting awareness and control of the use of genetically engineered organisms, products of modern biotechnologies, especially in open systems and in the centres of origin of aboriginal forms of domesticated and cultivated animals and plants.

Regions and objects of biodiversity requiring special attention:

- regions with a high agricultural potential in the steppe and forest-steppe zones and transition zones on the fringes of the conurbations subject to maximum deterioration of the environment where ecosystems fail to support productive agriculture and man's physical surroundings fit for normal life;
- regions with fairly well-preserved ecologically-balanced natural-cultural complexes capable of maintaining the diversity and stability of agrolandscapes.

5.2.2.9. Ecosystems of Urban Areas

Ecosystems of urban areas have been maximally changed by man. Urbanization has led to practically complete conversion of natural ecosystems and their replacement by blocks of multi-storey buildings and extended traffic systems with only isolated plots of living nature in between. A gross neglect of nature conservation priorities in the course of urban development especially in the period of its intensive growth throughout the second part of the 20th century resulted in the destruction of ecosystems, sharp decline in biodiversity, and the loss of historically and ecologically valuable natural-cultural urban complexes. Meanwhile, conservation of living nature in urban concentrations is a necessary condition for the creation of comfortable and pleasing environment for city dwellers.

A sinificant part of Russia's population live in cities, large and small. Hence, the necessity to
- form healthy and comfortable physical surroundings;
- ensure ecological safety;
- conserve the existing natural and natural-cultural diversity.

Biodiversity of urban ecosystems enjoys but poor legislative protection; indeed, the existing federal laws do not even touch upon their use and conservation.

Major threats to biodiversity of urban areas

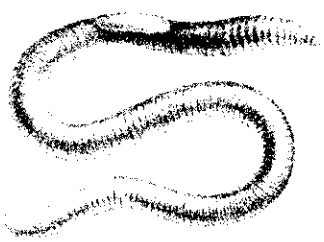
- Construction of buildings, communications, roads, and other urban installations without regard for the spatial structure of ecosystems and conservation of their biodiversity.
- Chemical pollution of air, soils, and water by motor vehicle emission and industrial waste.
- Concentration of domestic refuse.
- Uncontrolled recreational activity; destruction of plant and animal life.
- Noise pollution.
- Thermal pollution (elevated mean air temperature in urban areas).
- Light pollution from industrial and street lighting.
- Electromagnetic pollution from transmission lines, radio and TV stations, and industrial objects.
- Introduction of alien species prevailing over local ones.

Priority measures for conservation of biodiversity of urban areas

- Minimization and prevention of all types of pollution.
- Conservation of natural ecosystems, individual animal and plant species.
- Conservation and restoration of ecologically-balanced historically valuable natural-cultural complexes.
- Optimization of the proportion of natural and anthropogenic elements in urban areas; maintenance of the in-

tegrity of natural ecosystems and natural-cultural complexes by establishing ecological corridors connecting them.
- Construction of ecosystems on the principles of rational ecological engineering and landscape planning; improvement of their environment-forming and protecting functions.
- Elaboration and observance of architectural norms ensuring conservation of living nature in urban areas.
- Strict control of the abundance of synanthropic animals and plants.
- Prevention of penetration of alien species aggressive towards local ones and harmful to natural-cultural complexes.
- Siting of recreational attractions with regard for optimal conservation of natural and natural-cultural complexes.

Regions and objects of biodiversity requiring special attention:
- natural complexes of the greatest urban agglomerations and industrial areas;
- historically valuable and ecologically-balanced natural-cultural complexes in the cities (garden-park complexes, urban forests and forest parks, squares, boulevards, etc.);
- suburban natural complexes.



5.2.2.10. Soil Conservation

Protection of soils as a basic components of terrestrial ecosystems and the environment of numerous plants, animals, and micro-organisms must be given special attention in the context of biodiversity conservation. Indeed, the overwhelming majority of the known species of living organisms are connected with soil. The soil cover represents a unique complex of biotic and abiotic components, i.e. a specific type of ecosystem whose normal development is vital for the very existence of terrestrial life. Soil formation is a very long process and its disturbance by human actions may have catastrophic consequences.

In Russia, the condition of the soil cover and soil biota on agricultural lands, on a significant part of forest land, and especially in urban areas and those alloted for traffic, transportation, and other requirements is extremely poor and in many regions critical. About 56% of the agricultural lands are exposed to water and wind erosion. Both soil erosion and risk of erosion increase from north to south. They are highest in the chernozem zone and slightly lower in chestnut soils. The area of erosion-ridden lands and the intensity of leaching correlate with relief patterns. They are smallest on flat lowlands, increase on morain hilly plains, and reach a maximum on elevations cut by intermitting plains and ravines. In the European part of Russia, the soils of the Central Russian and Volga Uplands, High Transvolga area, the Cis-Urals, Stavropol Upland, and the foothill areas of the Caucasus are at the highest risk of leaching. The forest-steppe and dry steppe zones are also affected by soil erosion unlike natural steppes.

Major threats to the diversity of soils and soil biotas

- Extensive use of chemical products and industrial technologies in agriculture and large areas of arable land account for erosion-related degradation of the soil cover, transformation and disappearance of natural soils, degradation and death of their biota. During the last 50 years, the rate of erosional processes has increased 30-fold. Agricultural lands constitute 11% of all land resources in terms of area, and 6.8% of them are arable lands.
- Soil pollution by industrial waste, motor vehicle emission, effluents from cattle breeding farms, pesticides, radionuclides, oil and other hydrocarbones, and domestic refuse.
- Degradation of forests communities leads to soil erosion in mountain and arid regions and to bogging in the north. Inadequate logging techniques are responsible for the destruction of forest litter and soil.
- Both drainage of wetlands and bogging in the absence of adequate drainage schedule and techniques lead to the upset of regional water balance, intensive soil mineralization, and destruction of peat massifs.
- Non-sustainable irrigation leading to the saturation of the soil by water and to soil salinity.
- Flooding lands upstream from dams.
- Lacking reconstruction of soil amelioration systems installed in previous years.
- Environmentally unfriendly activities (ever increasing use of off-road vehicles, oil pollution in the permafrost zone leading to heavy erosion and decomposition of the thin surface layer of northern soils).
- Allotment of land for construction works and mining and its degradation (a total area of such land has thus far been relatively small but rapidly grows now).
- Invasion of soils by pests and agents of infectious plant diseases.

Consequences of human impact on soil ecosystems

- Degradation and disappearance of natural soil types.
- Water and wind erosion leading to the disappearance of the most productive surface soil layers and sometimes to the complete destruction of soil and its biota.
- Dehumification, i.e. decreased humus content on arable lands compared with normal values, due not only to erosion but also to accelerated mineralization and enhanced nutrient extraction by crops.
- Suppression of soil biota and sterilization of soils.
- Soil acidification caused by the application of acidic mineral fertilizers to lime-poor soils.
- Deterioration of soil physical properties (increased compactness, decreased porosity and penetrability).
- Secondary soil salinization and alkalinization resulting from irrigation.
- Loss of valuable properties of the soil on ameliorated lands due to upwelling of ground water, bogging, and secondary salinity related to the lack of reconstruction of ameliorative systems.
- Desertification, formation of open areas of sand and shifting sands (documented in 26 administrative regions of the Russian Federation).

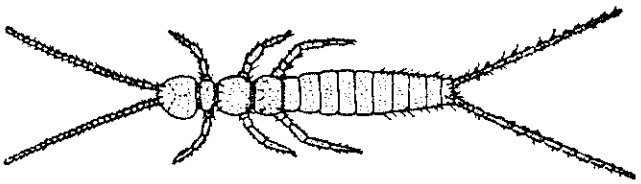
Priority measures for conservation of soil ecosystems

Conservation of biodiversity and stability of ecological systems requires an adequate and sustainable proportion of various lands including specially protected natural areas and lands used for a variety of purposes (land reclamation, ameliorative agriculture, livestock breeding and grazing , forestry, etc.). All economic and protective measures should be thorougly differentiated in accordance with zonal and regional characteristics of the soil cover.

- Elaboration of a national policy of soil protection. Improvement of mechanisms for inter-sectoral co-ordination and adoption of the Complex Action Plan of soil use and protection.
- Transition from the excessive use of chemical products and industrial technologies in agriculture to ecologically-sound adaptive land use.
- Compilation and publication of the Red Data Book of especially valuable and rare soils and their biotas. Organization of direct and indirect protection of soil objects. Elaboration of a national system of monitoring protected soils. Elaboration of those sections in the Land Cadaster of the Russian Federation and its administrative regions which concern soil protection.
- Consideration of the criteria for soil protection in planning the network of specially protected natural territories. Setting up soil sanctuaries, reserves, and soil natural monuments.

Regions and objects of biodiversity requiring special attention:

- soils of the forest-steppe zone (dark-grey forest soils including those with a secondary humic horizon; forest-steppe chernozems);
- soils of the steppes zone (chernozems and amorphous solonetz, black-meadow soils and meadow solonetz);
- soils of dry steppes and semi-deserts (dark-chestnut micellary-carbonates, dark-chestnut farinaceous-carbonates, dark-chestnut and resting-carbonates, chestnut, and light-chestnut soils);
- soil complexes of dry steppes (chestnut soil, solonetz and solonchak);
- soils of wetlands, swamp soils in the upper reaches of rivers.



5.3. Priority Species, Ecosystems and Regions with Special Conditions of Biodiversity Conservation

At the federal level, the main attention should be paid to the groups of species and ecosystems which are either threatened or crucial for conservation of national and global biodiversity. This goal requires co-ordination of relevant measures within the country and at the international level. Main regions of biodiversity conservation are also identified below.

5.3.1. Priority Species

The following groups of species require special attention:
- rare and endangered species;
- migratory species;
- commercially exploited species;
- species endemic to Russia;
- rare and threatened breeds of domestic animals and varieties of plants.

Rare and endangered species

Rare and threatened species are those facing the threat of extinction or decline of their abundance and range due to effect of economic activities and also species potentially vulnerable to this effect by virtue of their biological characteristics (naturally rare, narrow-ranged, and relict). These species require special measures of protection and monitoring. Certain rare species are legally protected by elisting them in the Red Data Book of Russian Federation, an official legislative document. National Strategy for conservation of these species has been elaborated in Russia.

Migratory species

These species need special attention because they depend on a wide range of seasonal habitats often situated far from one another and sometimes in different countries. Moreover, these animals are especially vulnerable to edverse impacts during migrations, and their increased mortality in this period needs to be compensated. Conservation of these species requires inter-regional and international co-ordination of relevant protective measures and setting quotas on their catch or harvest.

Commercially exploited species

Species exploited for commercial purposes or household use should be considered as priority objects of conservation for the following reasons:
- permanent pressure and numerous forms of exemption from nature influencing not only the abundance but also the intra-population and intraspecific structure of the species;
- probability of escape of commercial exploitation from the government control, risk of excessive and/or destructive exploitation;
- high commercial value of these species;
- their importance for the existence of national minorities and maintenance of their cultural traditions.

Conservation of economically important species is ensured by using methods and technologies of sustainable exploitation and strict control of commercial activities and population condition.

Species endemic to Russia

These species are designated as priority species because Russia bears exclusive responsibility for their conservation. Many endemic species have narrow ranges and are rare or endangered which gives reason for special attention to their present status.

Rare and threatened breeds of domestic animals and varieties of plants

These species are priority objects of conservation for the following reasons:

- any organism modified by man is a carrier of unique genetic information coding for its inheritable properties (of economic value or not) including yet unknown one that may prove useful in future;
- diversity of races and varieties is a necessary prerequisite for the maintenance of ecologically balanced (adaptive) agriculture in Russia with its enormous diversity of natural and socio-economic conditions; it determines the possibility of selection forms rapidly responding to changes in ecological (including climatic), economic and social situation and is therefore indispensable for the sustainable development of agricultute and reliable food supply.
- local breeds and varieties are integral elements of traditional cultures of nature use ("living cultural heritage").

5.3.2. Priority ecosystems

Priorities of conservation of major categories of terrestrial and marine ecosystems described as being in critical condition in Russia are identified at the federal level. These ecosystems include forest-steppe, steppe and semi-desert ecosystems; ecosystems of the Caspian Sea, the Sea of Azov, the Black and Baltic Seas.

Ecosystems of lower levels requiring special attention are considered in relevant paragraphs.

Forest steppe, steppe, and semi-desert ecosystems

In Russia, these ecosystems have undergone maximum transformation by man.

At present, they persist as small isolated sites and many lost the ability for self-recovery. To conserve these ecosystems at the territory of Russia, it is necessary to protect all the remaining natural communities, take active measures necessary for their recovery, and develop ecologically safe agricultural and land use technologies.

Ecosystems of the Caspian Sea, the Sea of Azov, the Black and Baltic Seas

These marine ecosystems are in critical condition due to intense complex modification by adverse anthropogenic factors (pollution, over-fishing, invasion by alien species, etc.). Immediate active measures at the federal level are necessary for their conservation.

5.3.3. Priority Regions and Ecoregions

The following regions require special attention:
- unique natural complexes, centres of endemism and regions of great value for the conservation of global and national biodiversity including UNESCO's natural and cultural heritage sites;
- regions with special conditions of biodiversity conservation distinguished by the complexity of problems and ways of their solution where a significant effect may be reached only in the framework of ambicious programs (regional biodiversity conservation strategies with relevant action plans).

Unique natural complexes, centres of endemism and regions of great value for conservation of global and national biodiversity

- Courland Spit,
- coastal waters of the Barents Sea,
- the Caucasus,
- primary forests in the North of the European part of Russia and Siberia,
- Volga Delta,
- Caspian Sea,
- Putorana Plateau,
- Altai,
- Lake Baikal,
- Transbaikalia,
- southern quarters of the Russian Far East (Primorye),
- Kamchatka Peninsula,
- Chukchi Peninsula,
- Wrangel Island.

Regions with special conditions of biodiversity conservation

Primarily mining regions: nortern part of European Russia, West Siberia, northern part of Krasnoyarsky Kray (territory), Sakhalin, probably gold-mining regions of East Siberia and the Far East.

Prevailing regional features: one or two dominant branches of industry, with mining employing the overwhelming percentage of labour force; transient population of contract workers showing little interest in biodiversity and its conservation for the benefit of small resident communities; high ecosystem degradation rate attributable to heavy pollution and direct destruction by mining operations.

Necessary conservation measures: improvement of mining techniques, designation of areas of traditional nature use by indigenous peoples and legal prohibition on mining operations at these territories, encouragement of contribution of mining industries to biodiversity conservation as a means of shaping the ecologically attractive face of a company.

Southern part of European Russia

Prevailing regional features: conversion of ecosystems or the loss of ability for self-recovery, intensified resource-consuming farming, water deficit, low per capita income and educational level of the population, large number of religious people, little concern for environmental problems on the part of residents.

Necessary conservation measures: conservation of all remaining natural communities; formation of a networks of specially protected natural and historico-cultural territories and active management of their ecosystems, establishment of ecological corridors; exemption of unproductive agricultural lands from economic use for the reconstruction or rehabilitation of natural ecosystems, elaboration and implementation of water use projects and protection of water bodies.

Regions of concentrationed industry (the southern Urals, Kuzbass, the city of Moscow and Moscow region, etc.)

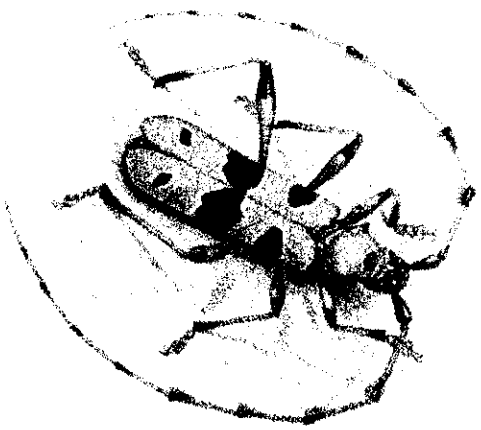
Prevailing regional features: high level of man-induced ecosystem transformation, intense economic activity and predominance of energy-consuming industries, high risk of environmentally-significant losses and the necessity of repair; challenging opportunities for the implementation of nature conservation projects.

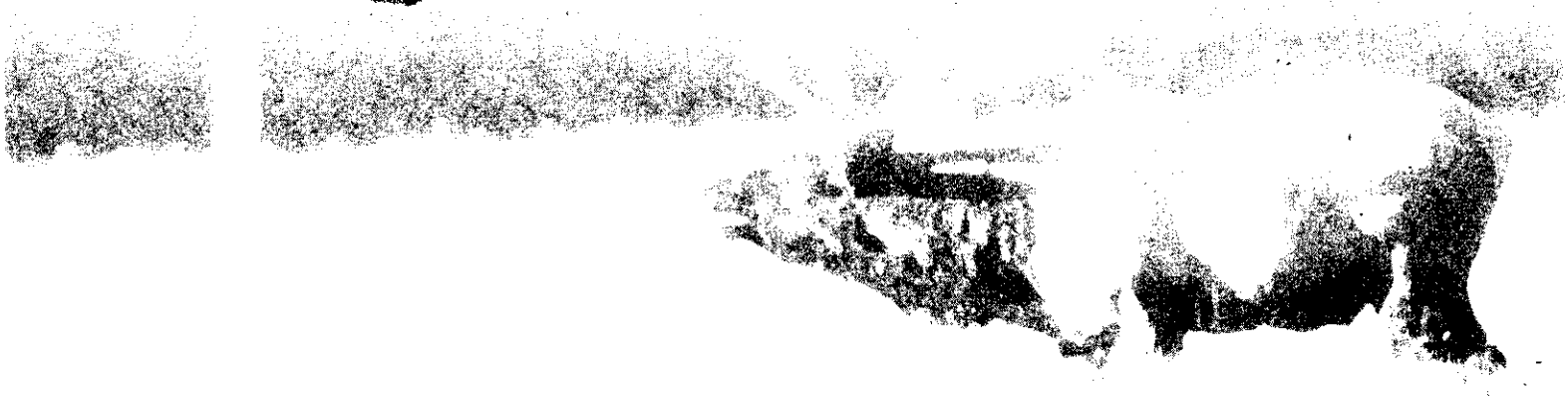
Necessary conservation measures: decrease of pollution and resource consumption for industry, development of a network of specially protected natural territories, establishment of ecological corridors.

Land and sea frontier areas of the country

Prevailing regional features: inflow of pollutants and threat to biodiversity from the territories of other countries.

Necessary conservation measures: establishment and management of specially protected natural territories, international co-operation, support of traditional nature use, measures for biodiversity conservation at military holdings and bases, strengthening of frontier regime.





5.4. Challenging Economic and Other Activities

- Development of environmentally friendly and low-level-waste technologies, decrease of energy and resource consumption including water consumption in industry and transport. Development of technologies using resources recycled for repeated use. Control over dumping of hazardous wastes.
- Prevention of environmental pollution and minimization of harm to natural ecosystems caused by mining especially in the permafrost zone. Rehabilitation of disturbed ecosystems after the termination of mineral extraction. Support of traditional nature use by indigenous peoples in areas of intense mining activity. Reduction to a minimum of a damage inflicted on hunting grounds and agricultural lands.
- Transition from the extensive use of chemicals and industrial technologies in agriculture to adaptive evolutionary and ecologically-sound agricultural production. Introduction of ecologically safe technologies to agriculture. Conservation of the diversity of breeds and varieties of domestic animals and plants, cultivation of those best adapted to local conditions. Consideration of the diversity of regional and local conditions in the development and application of various modes of economic activities. Enhancement of spatial diversity of agroecosystems. Formation of complexes of natural ecosystems and agroecosystems requiring minimal management for the maintenance of ecological balance. Optimization of the spatial structure of natural-economic complexes.
- Raising awareness of the principles governing the use of genetically engineered organisms, products of modern biotechnologies, potentially hazardous to the environment or human health especially in open systems and centres of origin of selected plants or animals.
- Further development of quarantine control practice and regulations for the prevention of introduction of alien species with imported agricultural produce and other commodities or their release with water from ballast tanks.
- Revision of modern forestry activities with special emphasis on biodiversity conservation as an indispensable precondition for the sustainable development of forests with regard for their role in maintaining viable ecosystems. Logging, reafforestation, and management operations must ensure conservation of forest species and ecosystem biodiversity.
- Transition to ecologically-sound strategies of commercial hunting and fishing including marine fishery. Planning for hunting and artificial reproduction of game animals with due regard not only for species and population numbers but also for the conservation of their genetic, spatial, sexual, age, and social structure and habitat protection. Also, potential repercussions of hunting one species on other species of the ecosystem must be taken into account.
- Design and construction of hydroinstallations, roadways, pipelines, power lines, etc. in a way preventing animal mortality. The siting of linear constructions excluding disturbance of the spatial structure of natural ecosystems, populations, and species, their migration routes, nesting sites, etc.
- Conservation, monitoring, and studies of biodiversity at military holdings and bases, reservation of these areas for further designation as specially protected natural territories after their recovery from the possession by the armed forces. Biodiversity conservation in frontier areas. Prevention of environmental pollution by military facilities, spacecrafts, and related technologies. Prevention (minimization) of harm to biodiversity during military exercises.
- Development of evironmentally friendly technologies for the removal and treatment of domestic refuse and municipal effluents.
- Development of ecologically safe tourism harmless for natural systems. Taking into consideration requirements for biodiversity conservation when planning recreational activities and installations.

5.5. Development of the Network of Specially Protected Natural, Historical and Cultural Territories

● Development of networks of protected natural territories and areas of traditional nature use.

● Priority extension of the network of specially protected natural territories in the steppe zone.

● Priority enhancement of the proportion of specially protected freshwater and marine ecosystems in the network of specially protected natural territories.

● Enhancement of functional diversity of specially protected natural territories including
- territories of traditional nature use occupied by indigenous peoples and other minorities practicing subsistence economies that ensure maintenance of the functional potential of natural ecosystems;
- old-aged forest stands as reservations of biodiversity of climax forest communities;
- territories for conservation of valuable soils;
- wetlands of international importance;
- ecologically balanced historico-cultural complexes and landscapes;
- territories for conservation of especially valuable local objects of biodiversity (bird colonies, spawning grounds, breeding sites of hoofed mammals and seals, walrus rookeries, polar fox dens, etc.);
- areas to be designated as specially protected territories.

● Differential approach to the planning of networks of specially protected natural territories depending on the extent of anthropogenic transformation in a given region:
- establishment of "ecological corridors" in heavily impacted regions;
- protection of the most valuable objects of biodiversity in poorly-developed regions undergoing intensification of economic activity.

● The choice of protective measures depending on specific regional conditions:
- at slightly disturbed territories with natural complexes occupying large areas, new developments must ensure minimal interference with their integrity and/or rehabilitation, as appropriate;
- at territories undergoing moderate economic development with small natural ecosystems persisting within relatively small areas, strict and selective protection should be combined with regulated use of natural resources;
- at small isolated territories with severely disturbed natural complexes on reclaimed lands, specialized measures of conservation and/or restoration of natural objects are needed.

● Integration of specially protected natural and historico-cultural territories into the socio-economic structure of a given region, enhancement of their positive influence on the life of the region, encouragement of the interest of local population in specially protected natural territories, involvement of members of national minorities and other residents in joint activities related to environmental conservation.

● Organization of research at specially protected natural territories.

6. Implementation of the Strategy

6.1. Mechanisms of Strategy Implementation, Control and Correction

6.1.1. Action Plan

The Action Plan is formed to promote realization of the National Strategy of Biodiversity Conservation in Russia and attainment of its goal. According to the Convention on Biological Diversity (article 6), each contracting party elaborates national strategy, plan, and programs of conservation of biological diversity or adopts corresponding strategies, plans or programs in conformity with its specific conditions and reqirements. With this in view, the national Action Plan envisages the following actions:

- co-ordination between Russian state programmes (federal, regional, sectoral, intersectoral) and projects of non-governmental organizations (Russian and international funds and public bodies) in the area of biodiversity conservation;
- identification of gaps in the activities pertaining to biodiversity conservation;
- elaboration of additional plans and programs and their incorporation into the Action Plan.

The Action Plan should be formulated based on the consideration of project applications submitted by all subjects of the Strategy and their selection for subsequent implementtion. The applications must be collected and Action Plan corrected in an open manner and the results conveyed to the public through the agency of the mass media.

The Action Plan is realized by joint efforts of all subjects of the Strategy. Federal and regional government bodies use it as guidelines to formulate applications for budgetary funds and substantiate relevant task programs. Projects included in the Action Plan are supported by the government, non-governmental and international nature conservation organizations, private companies, and other domestic and foreign partners.

The Action Plan is a document of short-term planning subject to correction in line with changing ecological and socio-economic situation in the country, available funds, and progress in the development of new methods and technologies.

A co-ordinating consultative council is set up for the development of the Action Plan. To ensure participation of various sectors of the society in the planning process, the council must include representatives of federal executive and legislative powers, scientific institutions, private companies, funds, nature conservation organizations, general public, and mass media.

6.1.2. Control and Efficiency Criteria for the Implementation of the Strategy

Effectiveness of Strategy implementation is evaluated in the course of its realization and after the completion of individual projects, based on the following criteria:

- quantitative and qualitative changes in the condition of objects of biodiversity at various hierarchical levels (populations, species, communities, and ecosystems);
- changes in public consciousness, legislation, and economic activities influencing biodiversity;
- changes in nature use concepts and technologies;
- size of the network of specially protected natural territories;
- efficiency of measures employed for Strategy implementation (estimation of ecological effect per unit of the resources utilized).

Parameters and methods of estimation are corrected depending on the available information and the quality of Strategy substantiation. Monitoring implementation of the Strategy is an important prerequisite for its success if it brings about regular data on the completed and on-going projects of the Action Plan, difficulties encountered and measures necessary to overcome them.

A comprehensive assessment of the implementation of the Strategy should provide a basis for the elaboration of further actions and measures.

6.1.3. Analytical and Informational Support of the Strategy

Informational and analytical support of the Strategy, formulation of Action Plan and its realization are crucial for an efficient organization of the Strategy process.

Equally important is the establishment of an efficient tool in the form of an interdepartmental analytical and informational centre to function as a link between national remediation mechanisms and those stipulated by the Convention on Biological Diversity.

Another important activity of this centre is to organize information support for the decision-making process at different levels and to ensure access to information for all interested users, its efficient application and distribution.

6.1.4. Sources for Funding Nature Conservation Programs

- Reform of taxation policy. Collection of adequate rental incomes from exploitation of natural resources. Present-day Russia is a country with resource-oriented economy, and taxation with an ecological slant may give impetus to the development of high-technology production.
- Increased revenue in budgets of various levels may be the main source for funding biodiversity conservation.
- Support by international ecological foundations including compensation for limitations on economic activities in behalf of nature conservation, e.g. in the Lake Baikal area, old-aged forests of Karelia, and the Caspian Sea.
- Incomes from privatization of property including objects of biodiversity.
- Ecological insurance funds.
- Selling licenses and similar benefits.
- Funds accumulated from fines and suits for damage to biodiversity.
- The "debts to nature" mechanism for the use of budgetary funds in nature conservation in Russia which must be taken into consideration in settling debt-servicing obligations among countries and with international financial organizations.
- Market mechanisms of the Kyoto Protocol related to quotas on discharges of hotbed gases.
- Funds-in-trust investments and incomes from highly profitable economic activities. Multi-purpose private funds arising as an inevitable response to strict ecologic regulations of investment projects.

6.2. Approaches to the Elaboration of Regional Strategies and Action Plans for Biodiversity Conservation

Substantial regional differences in natural and socio-economic conditions, anthropogenic pressure, and the extent of transformation of natural systems dictates the necessity of regional approach to Strategy implementation.

Regional strategies should be based on the principles of the National Strategy. At the same time, they must take into consideration specific natural and socio-economic conditions of individual regions. A regional strategy may reflect the needs of a given administrative unit or those of a group of ecoregions (river basins, lakes and seas, mountain systems, etc.)

The process of elaboration of regional strategies consists of the following principal stages

• *Inventory of regional biodiversity and analysis of its condition*. At this step, it is first of all necessary to estimate the suitability of the available data on regional biodiversity and a necessary scientific background for the elaboration of the strategy. An efficient strategy is elaborated based on the information about the current state of biodiversity, tendencies in its dynamics and underlying causes. In the absence of such data, relevant surveys should be planned and conducted.

• *Identification of priority objects for conservation*. The core problem in the elaboration of regional strategies consists in identifying the starting point and the main targets that require priority funding. Attempts to immediately conserve everything are as a rule doomed to failure. Rare species and natural complexes of national and international importance must be given special attention in regional strategies and relevant criteria employed to identify them and objects of biodiversity in need of conservation. The correct choice of such objects is an indispensable prerequisite for the successful management at the lowest possible cost.

• *Analysis of natural and anthropogenic factors directly and indirectly influencing objects of biodiversity*. It is important to analyse the widest range of interfering factors and identify their origin whether purely natural (e.g. climatic or geological) or anthropogenic (even if mediated through environmental changes, such as depletion of food resources or increased abundance of enemies). At this stage, it is necessary to conduct an inventory of nature users and identify sources of pollution in a given region.

• *Analysis of socio-economic conditions* (regional peculiarities of economic activity, legislative system, social processes, and public consciousness influencing biodiversity).

• *Identification of factors responsible for the deterioration in the state of objects of biodiversity*. Anaysis of natural and anthropogenic factors influencing biodiversity. No measure for their conservation will give effect until the main cause of the unfavourable situation is eliminated.

• *Estimation of the adequacy of the existing system of biodiversity conservation and protective actions*, including the assessment of representativeness and efficiency of the regional network of protected natural and historico-cultural territories.

• *Identification of priority socio-economic mechanisms* necessary for the conservation of biodiversity in the region including the improvement of regional legislative acts, elaboration of economic incentives, formation of public opinion and education.

• *Propagandistic campaign in support of measures for biodiversity conservation*, their broad discussion, elaboration of new ones, and attaining concensus as regards thier application in the future.

• *The choice of methods for conservation of biodiversity objects*. Generally speaking, those management modalities should be given preference which ensure optimal conservation of a given object in its typical environment.

• *Territorial planning of biodiversity conservation* taking into account the spatial structure of biosystems and territorial zonation.

• *The choice of concrete forms and ways of realization of selected conservation methods* (including elaboration of relevant tools and measures); measures needed for the promotion of education and formation of public opinion, economic and legislative mechanisms for the prevention of adverse anthropogenic effects based on the analysis of socio-economic conditions in the region, available resources and facilities.

• *Estimation of ecological and economic efficiency* of the newly elaborated measures.

• *Elaboration of the regional Action Plan* implies the search for the sources of funding, identification of the participants, and working out a schedule for its realization.

6.3. International Co-operation

International co-operation is one of the most important instruments for attaining the goal of the Strategy. The system of international ecological legislation is based on the balance of obligations of different countries concerning environmental conservation and their sovereign right to use natural resources. International co-operation in the field of environmental protection is regulated by a number of global, regional, and bilateral conventions, involves a large number of programs and organizations, and uses numerous databases and information networks.

According to the Decree of the President of Russian Federation No 236 of 4 February 1994 On the State Strategy of Russian Federation for Protection of Environment and Ensuring Sustainable Development, biodiversity conservation is one of the main lines of the country's activity in the solution of global ecological problems.

Russia is involved in international co-operation by multi-lateral conventions and agreements on biodiversity conservation, European Strategy on biological and landscape diversity, bilateral conventions on the protection of migratory birds, and agreements on environmental conservation. Also, it co-operates in the field of biodiversity conservation with governmental and non-governmental organizations and participates in many international programs. Of special importance is its co-operation on biodiversity protection in the framework of the Commonwealth of Independent States (CIS).

Russia's enormous territories virtually undisturbed by human activities make the country a most important actor in international processes and the largest region on the planet preserving the biodiversity of northern Eurasia. In view of this fact, Russia's efforts to prevent threats to the global environment must be given an adequate support from the world community and considered in the development of international economic and financial mechanisms.

A principal objective of international co-operation of Russia in the field of biodiversity conservation is to mobilize resources in support of priority protective measures to be implemented in the framework of the National Strategy of Biodiversity Conservation.

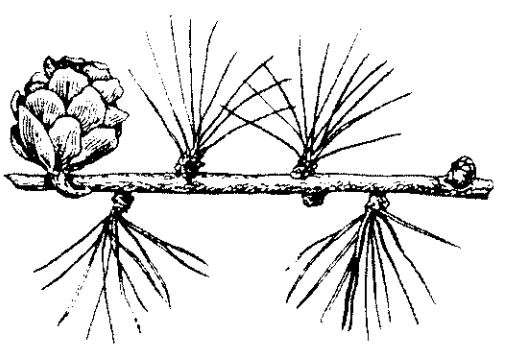
International co-operation of Russia in the field of biodiversity conservation should develop along the following main lines.

● Fulfillment of obligations of the country as a party of international agreements and participation in the work of international organizations concerned with biodiversity conservation. The following aims should be reached in this respect:

- efficacious inter-sectoral co-ordination for the fulfillment of the country's international obligations as regards biodiversity conservation especially in the context of the Convention on Biological Diversity and other agreements on nature protection at the global and regional levels; co-ordination of collaboration with international organizations with special reference to accounting and information.
- development of mechanisms to ensure acsess of interested national institutions to relevant information and its rapid distribution;
- elaboration of systems of measures to be implemented in the framework of international agreements on biodiversity conservation;
- involvement of regional administrations in the realization of international obligations of the country concerning biodiversity conservation.

● Maximally efficient use of all channels and instruments of international co-operation for its further development and mobilization of necessary resources for the protection and sustainable development of biodiversity in Russia. This work pursues the following aims:

- collaboration with international agencies and financial organizations in the further development of biodiversity conservation taking advantage of international experience in this field;
- use of facilities and financial resources of international donors for the implementation of priority measures for biodiversity conservation in Russia;
- use of facilities for the joint implementation of projects on biodiversity conservation and mutually beneficial sharing and application of their results.



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