

3. To develop and adopt legislative and institutional arrangements that prohibit the burning of waste oils on equipment that does not meet environmental requirements.

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APPROACHES TO ESTIMATION OF BIODIVERSITY OF FOREST PHYTOCENOSES OF BREST REGION

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The article analyzes the quantitative and qualitative indicators of the forest fund of the Brest region. The species composition of forests is compared. Forest phytocenoses are characterized by the following parameters: the area of individual types of forests, timber reserves, age characteristics, the presence and composition of protective areas, the composition of forest species, the completeness of plantations and productivity.

Keywords: biodiversity, forest phytocenoses, forest lands of Brest region, timber reserves, forest cultures, protective areas, tree plantations age, productivity.

Biological diversity reflects the complexity of the biological system, the different qualities of its components. Biodiversity can be classified into three levels of the organization: genetic, species and ecosystem diversity, that is, the diversity of ecosystems themselves. Biodiversity is a dynamic indicator, because it varies easily in time and space. However, a general rule is the reduction in the number of species. The causes of this phenomenon are diverse: changing climatic conditions, technogenic transformation of natural territories, pests, anthropogenic activities, leading to species destruction and pollution of natural ecosystems, etc. In this regard, in 1992 in Rio de Janeiro, the Convention on Biodiversity was adopted, in which for the first time the conservation of biodiversity was declared a priority for humanity.

In Belarus, at the highest state level, strategies for the conservation and sustainable use of biological diversity have been developed, integrated into wider national plans for environmental protection and development.

The territory of the Brest district accounts for 36.5 % of forest land. The forest fund of this district consists of the Brest Forestry Enterprise (52341 ha), the Malorita Forestry Enterprise (6617 ha) and the State Unitary Enterprise "Brestzelenstroy" (318 ha).

The largest part of the lands, belonging to the forest fund of the Brest district, comprises of wooded lands, where prevail the forest covered lands, the sparse planted forest ranks second and the smallest area is occupied by forest nurseries and plantations. As part of non-forest lands, the leaders are the lands under roads, fire breaks and other transport routes, as well as land under swamps.

As for the forest-covered lands, the territories of the Brest Forestry Enterprise (48141 ha) are dominant, the Malorita Forestry Enterprise (6055 ha) is the second, the Brestzelenstroy (288 ha) occupies the smallest area. A significant part of this indicator is represented by the main forest-forming species, where conifers rank first (70,5–80,2 %), soft-wooded broadleaved species account for 18,4–26,5 %, the Brest Forestry Enterprise and the Malorita Forestry Enterprise have also hard-wooded broadleaved species (3,8–4,6 %).

The same dependence is observed on timber reserves: the State Forestry Enterprise (SFE) "Brest Forestry" is also leading – 8590,5 thousand m³, "Malorita Forestry" has a reserve of 1116,5 thousand m³. The State Unitary Manufacturing Enterprise "Brestzelenstroy" has the smallest reserves – 52,2 thousand m³. Among the main forest-forming species, coniferous species is the leader in this indicator (71,5–91,8 %). Soft-leaved species (8,2–24,5 %) and hardwoods species in SFE of Brest and Malorita (4 %) show lower percentage.

Pine, birch and black alder forests are dominating among the timber species of the region. Mossy, bilberry and heather forests occupy the largest areas in their composition.

Regarding the qualitative characteristics, it should be noted that the main representatives of the forest areas are the middle-aged plantations and young growths. The smallest area is occupied by ripe stands and old-growth timber stands.

The forest fund of the territories which belong to the State Unitary Manufacturing Enterprise "Brestszelenstroy" is represented by parkland zones (75 %) and forests of the 3rd zone of the protective sanitary zone of the resorts (24 %). The protective territories of the SFE "Malorita Forestry" are represented by forests of the 3rd zone of the health protection zone of the resorts, as well as by the protective forest strips along the railway lines (1 %). SFE "Brest Forestry" has the largest variety of territories of this type. Forests of forestry areas of green zones (61,2 %) and forest reserves of national importance (14,5 %) dominate in its composition, while forests of natural monuments of national importance (0,1 %) occupy the smallest areas.

BIOKINETIC AND DOSIMETRIC MODELS FOR RADIOLOGICAL PROTECTION

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This article provides a description of biokinetic and dosimetric methodology, and the use of bioassay data. It will consist of element sections describing element-specific biokinetic models, and provide dose coefficients and bioassay data.

Keywords: biokinetic and dosimetric models, radiological protection, dose coefficients, bioassay functions.

The effective dose enables the summation of internal and external exposures to reference persons for protection purposes, but it is not a scientific quantity and does not provide the best estimates of dose and risk to individuals, while the most recent biokinetic and dosimetric models are ideally suited for such specific calculations, being readily adapted to the age and sex of individuals and to specific biokinetic characteristics. The International Commission on Radiological Protection (ICRP) has developed biokinetic and dosimetric models, used to calculate dose coefficients and bioassay functions. Biokinetic models are mathematical representations of the movement of elements and their radioisotopes within the body and their uptake and retention in organs and tissues. The biokinetic models can be used in many other areas, including toxicology, pharmacology, and medicine. The new generation of computational phantoms can be adjusted to the body shape and organ dimensions of specific individuals so that they can be used, for example, for medical applications, in which accurate estimates of absorbed doses are required. It is also important to ensure that models are sufficiently reliable to ensure adequate protection.

WARP DRIVE - SUPERLUMINAL TRAVEL

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Considered some of its twists and turns when general relativity and quantum mechanics come into play, discuss one of the most interesting proposals for faster than light travel: warp drives.

Keywords: warp drive, hyperspace, space-time, superluminal travel, general relativity, The Casimir effect.

Nothing can travel faster than light with respect to space, but what about space itself? The kinematics of general relativity (GR) sets no restriction on the expanding or contracting capacities of space-time itself. By manipulating the light-cone structure of Minkowski space-time one can construct geometries allowing for superluminal travel. Prototype of that is the warp-drive geometry introduced by Miguel Alcubierre in 1994 [1]. This geometry represents a bubble containing an almost at region, moving at arbitrary speed within an asymptotically at space-time. Mathematically its metric can be written as:

$$ds^2 = -c^2 dt^2 + [dx - \vartheta(r) dt]^2 + dy^2 + dz^2$$