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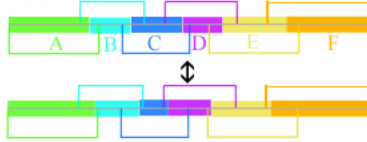
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How do we depend on biodiversity? - Biodiversity ensures ecosystem ability to self-regulation and so crucially contributes to the global ecological stability.

Potential ecological niches are somewhat wider than realised ones in a community of co-adapted aboriginal species. So, these species are able to replace one another when their populations fluctuate in size. The community smoothes over disturbances and so stabilises environment.

Fig. 1. Species A – F sharing a resource

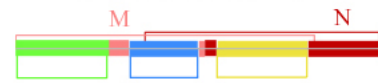


Legend for Fig. 1 and Fig. 2:

potential and realised niches

The pattern of sharing varies, but the resource is shared completely in the community of co-adapted species (Fig. 1). After species B, D, F had disappeared, species A, C, E fully realised their potential niches, but alien species M and N have seized the remained resource too (Fig. 2).

Fig. 2. Invasion of alien species M and N in the modified community



Lack of species co-adaptation within a modified community leads to decrease of its environmental function.

2010 Target: We need first of all a Native Biodiversity of natural ecosystems developed during long-term co-evolution of aboriginal species.

How to assess a Native Biodiversity? Rare species with high environmental requirements are indicators of intact or low disturbed natural ecosystems.

Species with high environmental requirements are vulnerable to human impact on ecosystems. They disappear from ecosystem before other species with similar but wider ecological positions. So we consider the presence of several rare species occupying essentially different ecological positions within ecosystem as a criterion of the native or low disturbed biodiversity. Such an approach allows revealing important natural areas objectively and rapidly.

We note several size classes of areas that viable population needs:

- VI – natural tracts and its complexes of the eco-regional level (large carnivorous mammals and raptor birds)
- V – natural tracts consisting of many various biotopes (large carnivorous mammals and middle size raptor birds)
- IV – group of similar biotopes (big herbivorous mammals, middle size birds and carnivorous mammals)
- III – biotope / biocenose (small mammals and birds)
- II – group of spatial mosaic patches within ecosystem (shrubs, amphibians and reptiles, several dragonflies and butterflies)
- I – microbiotope / spatial mosaic patch within ecosystem (fungi, some herbs and invertebrates)

The Level of Native Biodiversity is a size class of the biggest rare species occurring in the investigated area.

Habitats of “umbrella” rare species of size classes VI or V obligatory include habitats of rare species of lower size classes. So, the presence of rare species of size classes VI or V is a General Qualitative Criterion of the Native Biodiversity.

The difference between highest (VI) and really observed Level of Native Biodiversity is a General Impact Indicator.

The correlation between biodiversity and landscape characteristics allows revealing big natural areas by map analysis and remote sensing

An extensive range of little-disturbed natural communities on the north and north-eastern regions of European Russia, the Northern Ural, the north and central Siberia, and the Far East is known as the Great Euro-Asian Natural Backbone.

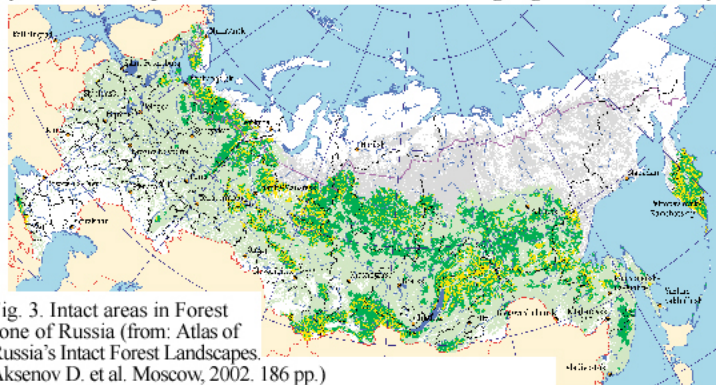


Fig. 3. Intact areas in Forest zone of Russia (from: Atlas of Russia's Intact Forest Landscapes. Aksenov D. et al. Moscow, 2002. 186 pp.)

Legend

- Intact areas within Forest zone:
 - Forest ecosystems
 - Non-forest ecosystems
- Forests outside the studied area
- Non-intact forests
- Non-forest areas

Great Euro-Asian Natural Backbone plays a crucial role in maintaining global environmental stability.

We must keep it as the unique Natural Heritage.

An ecosystem approach based ecological network linking Intact Natural Areas between them and with other natural tracts in Europe and Asia should be established in order to keep Pan-Eurasian ecological integrity and to support regional environmental stability.

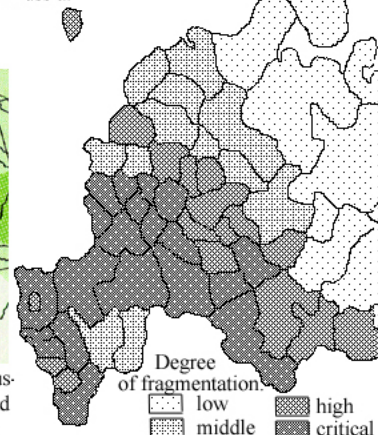
Protected Areas cover only 5 % of the Intact Forest Landscapes. This proportion must be increased.

Investigations of the Global Forest Watch Russia based on the remote sensing methodology of High Conservation Value Forest revelation updated in BCC showed heterogeneity of the Great Euro-Asian Natural Backbone and urgent necessity of the especial attention to it (Fig. 3).

Our assessment of the Level of Native Biodiversity in selected regions of the Russian plain showed several low indexes for the belt of Broad-Lived Forests (dark green on the Fig. 4).

A problem: Broad-Lived Forests in Russian (East-European) plain

Fig. 5. Landscape fragmentation in European, Caucasian, and West-Siberian Russia.



Investigations in Ryazan, Tula, and Moscow regions show, as usually, sub-optimal state of broad-lived forest remnants, including poor renewal of oak. On the other hand, steppe vegetation wide spreads to the North only by riverbanks.

We expect the cause of this process is landscape fragmentation and incoherent changes in climate and soil conditions. In result oak forests are replaced not by zone steppes but by birch boscaiges. These ones have a low biodiversity level and are unable to resist dispersion of invasive alien species.

Fig. 6. Forest types in Broad-Lived Forest Zone and adjacent areas of the European Russia (from: Map of Forests of Russian Federation. Bartalev S. et al. Moscow, 2004)



Forests on the map: Birch, Pine, Broad-Lived. Broad-lived forests had covered earlier even South-West Siberia, but now only birch forests occur there. North-South and West-East ecological linkages should be improved to stop biodiversity loss in ecosystems of the Broad-Lived Forest Zone.

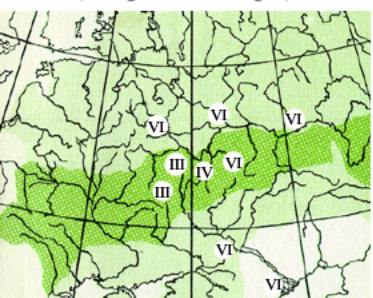


Fig. 4. Broad-Lived Forest Zone of the Russian plain (from: East-European Broad-Lived Forests. Popaduk R. et al. Moscow, 1994)