

HJ

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HJ 1173-2021

**National Ecological Status Survey and Evaluation Technical
Specifications-Ecosystem Service Function Evaluation**

全国生态状况调查评估技术规范——生态系统服务功能评估

(English Translation)

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Ministry of Ecology and Environment

Table of Contents

Foreword	
1 Scope	
2 Normative references	
3 Terms and Definitions	
4 General	
5 Technical process	
6 Evaluation index system	
7 Assessing technical methods	
8 Evaluation Results	
Appendix A (Normative Appendix) Calculation Methods of Ecosystem Service Function Indicators	

1 Scope of application

This standard specifies the content, process, evaluation index system and evaluation method of ecosystem service function evaluation.

This standard is applicable to the assessment of terrestrial ecosystem services in the national and provincial administrative regions, and other geographic regions can refer to this standard for implementation.

2 Normative references

This standard refers to the following documents or clauses thereof. For dated references, only the dated version applies to this standard.

For undated references, the latest edition (including all amendments) applies to this standard.

HJ 1168 National Ecological Status Survey and Evaluation Technical Specifications--Field Observation of Grassland Ecosystems
HJ 1169 National Ecological Status Survey and Evaluation Technical Specifications--Field Observation of Wetland Ecosystems
HJ 1170 National Ecological Status Survey and Evaluation Technical Specifications--Field Observation of Desert Ecosystems

3 Terms and Definitions

The following terms and definitions apply to this standard.

ecosystem services

The ecosystem provides the functions of windbreak and sand fixation, soil conservation, water conservation, and biodiversity maintenance for human beings.

water conservation

Through its structure and processes, ecosystems intercept stagnant precipitation, enhance soil infiltration, conserve soil moisture and replenish groundwater, and regulate rivers the function of increasing the amount of available water resources.

soil conservation

Ecosystems protect soil through their structure and processes, reduce the erosive capacity of rainwater, reduce soil loss, and prevent sedimentation.

can.

sand and storm prevention Ecosystem functions by increasing soil wind resistance and reducing wind erosion and sand damage.

biodiversity conservation the role of ecosystems in maintaining the diversity of genes, species, and ecosystems.

4.1 Principles

The evaluation of ecosystem services should follow the principles of normative, operability, advanced, and economic and technical feasibility.

4.2 Objectives and Scope

This standard is based on remote sensing and ground survey data, combined with long-term monitoring data of ecosystems, to quantitatively assess the status of ecosystem services.

to understand the changing trends of ecosystem services. The time range is one or more years supported by data, and the base year for multi-year evaluation is the first one year. The spatial extent is the evaluation area.

5 Technical process

This standard establishes a technical process for the assessment of ecosystem services, as shown in Figure 1.

6 Evaluation Index System

The evaluation index system of ecosystem service function is shown in Table 1.

7.1 Water conservation amount

Use the water balance equation to calculate the water conservation amount, see Appendix A for the specific method.

7.2 Soil retention

Soil retention was calculated using the modified soil loss equation (RUSLE). For details, see Appendix A.

7.3 Windbreak and sand fixation

The modified wind erosion model (REWQ) was used to calculate the sand fixation amount. For details, see Appendix A.

7.4 Habitat Irreplaceability Index

The habitat irreplaceability index was calculated using the Marxan site selection model. For details, see Appendix A.

7.5 Species richness

The number of species in the ecosystem community was counted by the method of quadratic survey. For details, please refer to HJ 1168, HJ 1169 and HJ 1170.

7.6 Number of rare and endangered species

Using the method of survey and statistics, the list of national key protected wild species in the region and the polar species in the IUCN Red List Number of endangered and endangered species.

8 Evaluation Results

Quantitative assessment of ecosystem services based on assessment results of water conservation, soil conservation, windbreak and sand fixation, and biodiversity maintenance the spatial pattern and overall change trend of different types of ecosystem services and the key areas of change are identified. water conservation, the higher or faster the soil conservation, windbreak and sand fixation, wildlife habitat area and species richness, the higher the ecosystem service function.

Or the trend of change is better.

Appendix A

(normative appendix) Ecosystem service function index calculation method A.1 Water Conservation Amount Computational ecosystems enhance soil infiltration and accumulation by intercepting stagnant precipitation, conserving soil moisture, regulating surface runoff and replenishing groundwater the total amount of water added by water. Calculated by the water balance equation.

A.2 Soil Conservation Calculated based on the modified soil loss equation (RUSLE).

Calculation of rainfall erosivity factor (R), soil erodibility factor (K), slope length and slope factor (L, S) and vegetation cover factor (C) Methods as below.

Rainfall erosivity factor (R) is the potential ability of rainfall to cause soil erosion, and is calculated as follows.

$0.2r$

$= .$ (A.22)

In the formula. K' - surface roughness factor;

K_r - soil ridge roughness, calculated by Smith-Carson equation, cm;

C_{rr} - random roughness factor, take 0, cm;

L - terrain relief parameters;

H -- Altitude difference within distance L .

A.4 Habitat Irreplaceability Index First, the indicator species were selected, and the distribution area of each indicator species was determined in counties based on historical data. Using Marxan software Based on the calculation model of site selection, iteratively calculated according to the constraints to obtain the priority areas for national biodiversity conservation.

The assessment unit is each county-level administrative unit in the assessment area, and the species selects the national first-class species and second-class species with recorded distribution in the whole country.

and other species with important conservation value, the number of occurrences of these species in each assessment unit shall be counted with reference to the Fauna and Flora of China.

Use the irreplaceability index to assign a value to the evaluation unit. The value is distributed between 0 and 100. The higher the value, the more effective the unit is in protecting biodiversity.

The value (irreplaceability) is greater.