**Supplement 7 Expert questionnaire for identifying the index weight for the health assessment index system of the Moso bamboo forest**

The Moso bamboo forest is an important forest resource. The health status of the Moso bamboo forest are increasingly affected by a range of unscientific and irrational management, which may permanently alter the Moso bamboo forest economic value and ecological function and disrupt the long-term sustainable management. However, how to assess the health status of the Moso bamboo forest and guide the scientific management of the Moso bamboo forest are little known. Therefore, based on the current management status and future development directions for the Moso bamboo forest, we tried to evaluate the health status of the Moso bamboo forest by employing a quantitative index assessment method. It provided a theoretical basis for the health management of the Moso bamboo forest. To establish a scientifically appropriate index system, each indicator weight or indicator importance required more advice. Hence, this questionnaire was designed to seek your professional recommendation.

Kindly read these instructions carefully before completing the questionnaire. The index system of Moso bamboo forest health assessment details as Table S7-1. The importance of object in the same layer were needed your professional judgement. For the specific assessment rules, refer to Table S7-2.

Table S7-1 Health assessment index system for the Moso bamboo forest

|  |  |  |  |
| --- | --- | --- | --- |
| Objective | Normal | Element | Index |
| Health assessment index system of Moso bamboo forest  *A* | Health basis of Moso bamboo forest  *B1* | Stand vigor  *C1* | Net photosynthetic rate *D1* |
| Bamboo shooting rate *D*2 |
| Diameter of breast height *D3* |
| Rhizome and root vigor *D4* |
| Stand structure  *C2* | Age structure *D5* |
| Density structure *D6* |
| Species composition *D7* |
| Shrub species richness index *D8* |
| Stimulus-response  *C3* | Human disturbance index *D9* |
| Drought index *D10* |
| Low temperature index *D11* |
| Value and function of Moso bamboo forest  *B2* | Economic value  *C4* | Bamboo shoot yield *D12* |
| Bamboo timber wood *D13* |
| Forest color *D14* |
| Ecological function  *C5* | Crown interception *D15* |
| Litter thickness *D16* |
| Soil permeability *D17* |
| Soil N content *D18* |
| Bamboo biomass *D19* |

We selected three aspects from the element layer as an example (Table S7-2). Suppose we give scores as follows, if we think Stand vigor is Slightly important than Stand structure, we mark it as 3; if we think the importance of Stand vigor and Stimulus-response is between Equally important and Slightly unimportant, we mark it as 1/2; if we consider Stand structure and Stimulus-response as Equally important, we mark it as 1. **Kindly pay more attention to the order of comparison. The figure shows how important (1-9) or how insignificant (1/2-1/9) the upper index is relative to the lower index.**

Table S7-2 The example of important judgement rules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Importance | Score | Stand vigor | Stand vigor | Stand structure |
| Extremely important | 9 |  |  |  |
|  | 8 |  |  |  |
| Quite important | 7 |  |  |  |
|  | 6 |  |  |  |
| Obviously important | 5 |  |  |  |
|  | 4 |  |  |  |
| Slightly important | 3 | √ |  |  |
|  | 2 |  |  |  |
| Equally important | 1 |  | √ |  |
|  | 1/2 |  |  | √ |
| Slightly unimportant | 1/3 |  |  |  |
|  | 1/4 |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |
|  | 1/6 |  |  |  |
| Quite unimportant | 1/7 |  |  |  |
|  | 1/8 |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |
|  |  | Stand structure | Stimulus-response | Stimulus-response |

**Please fill in the following weight questionnaires.**

(1) Normal layer importance judgement

Table S7-3 The importance judgement of Normal layer between Heath basis of Moso bamboo forest (*B1*) and Value and function of Moso bamboo forest (*B2*)

|  |  |  |
| --- | --- | --- |
| Importance | Score | Health basis of Moso bamboo forest |
| Extremely important | 9 |  |
|  | 8 |  |
| Quite important | 7 |  |
|  | 6 |  |
| Obviously important | 5 |  |
|  | 4 |  |
| Slightly important | 3 |  |
|  | 2 |  |
| Equally important | 1 |  |
|  | 1/2 |  |
| Slightly unimportant | 1/3 |  |
|  | 1/4 |  |
| Obviously unimportant | 1/5 |  |
|  | 1/6 |  |
| Quite unimportant | 1/7 |  |
|  | 1/8 |  |
| Extremely unimportant | 1/9 |  |
|  | | Value and function of Moso bamboo forest |

(2) Element layer importance judgement

Table S7-4 The importance judgement of Element layer

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Importance | Score | Health basis of Moso bamboo forest | | | Value and function of Moso bamboo forest |
| Stand vigor | Stand vigor | Stand structure | Economic value |
| Extremely important | 9 |  |  |  |  |
|  | 8 |  |  |  |  |
| Quite important | 7 |  |  |  |  |
|  | 6 |  |  |  |  |
| Obviously important | 5 |  |  |  |  |
|  | 4 |  |  |  |  |
| Slightly important | 3 |  |  |  |  |
|  | 2 |  |  |  |  |
| Equally important | 1 |  |  |  |  |
|  | 1/2 |  |  |  |  |
| Slightly unimportant | 1/3 |  |  |  |  |
|  | 1/4 |  |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |  |
|  | 1/6 |  |  |  |  |
| Quite unimportant | 1/7 |  |  |  |  |
|  | 1/8 |  |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |  |
|  | | Stand structure | Stimulus-response | Stimulus-response | Ecological function |

(3) Index layer importance judgement

Table S7-5 The importance judgement of Element layer in Stand vigor

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Importance | Score | Stand vigor | | | | | |
| Net  photosynthetic  rate | Net  photosynthetic  rate | Net  photosynthetic  rate | Bamboo shooting rate | Bamboo shooting rate | DBH |
| Extremely important | 9 |  |  |  |  |  |  |
|  | 8 |  |  |  |  |  |  |
| Quite important | 7 |  |  |  |  |  |  |
|  | 6 |  |  |  |  |  |  |
| Obviously important | 5 |  |  |  |  |  |  |
|  | 4 |  |  |  |  |  |  |
| Slightly important | 3 |  |  |  |  |  |  |
|  | 2 |  |  |  |  |  |  |
| Equally important | 1 |  |  |  |  |  |  |
|  | 1/2 |  |  |  |  |  |  |
| Slightly unimportant | 1/3 |  |  |  |  |  |  |
|  | 1/4 |  |  |  |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |  |  |  |
|  | 1/6 |  |  |  |  |  |  |
| Quite unimportant | 1/7 |  |  |  |  |  |  |
|  | 1/8 |  |  |  |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |  |  |  |
|  | | Bamboo shooting  rate | DBH | Rhizome and  root vigor | DBH | Rhizome and  root vigor | Rhizome and  root vigor |

Table S7-6 The importance judgement of Element layer in Stand structure

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Importance | Score | Stand structure | | | | | |
| Age  structure | Age  structure | Age  structure | Density structure | Density structure | Species composition |
| Extremely important | 9 |  |  |  |  |  |  |
|  | 8 |  |  |  |  |  |  |
| Quite important | 7 |  |  |  |  |  |  |
|  | 6 |  |  |  |  |  |  |
| Obviously important | 5 |  |  |  |  |  |  |
|  | 4 |  |  |  |  |  |  |
| Slightly important | 3 |  |  |  |  |  |  |
|  | 2 |  |  |  |  |  |  |
| Equally important | 1 |  |  |  |  |  |  |
|  | 1/2 |  |  |  |  |  |  |
| Slightly unimportant | 1/3 |  |  |  |  |  |  |
|  | 1/4 |  |  |  |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |  |  |  |
|  | 1/6 |  |  |  |  |  |  |
| Quite unimportant | 1/7 |  |  |  |  |  |  |
|  | 1/8 |  |  |  |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |  |  |  |
|  | | Density  structure | Species  composition | Shrub species richness  index | Species composition | Shrub species richness index | Shrub species richness index |

Table S7-7 The importance judgement of Element layer in Stimulus-response

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Importance | Score | Stimulus-response | | |
| Human disturbance index | Human disturbance index | Drought index |
| Extremely important | 9 |  |  |  |
|  | 8 |  |  |  |
| Quite important | 7 |  |  |  |
|  | 6 |  |  |  |
| Obviously important | 5 |  |  |  |
|  | 4 |  |  |  |
| Slightly important | 3 |  |  |  |
|  | 2 |  |  |  |
| Equally important | 1 |  |  |  |
|  | 1/2 |  |  |  |
| Slightly unimportant | 1/3 |  |  |  |
|  | 1/4 |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |
|  | 1/6 |  |  |  |
| Quite unimportant | 1/7 |  |  |  |
|  | 1/8 |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |
|  | | Drought index | Low temperature index | Low temperature index |

Table S7-8 The importance judgement of Element layer in Economic value

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Importance | Score | Economic value | | |
| Bamboo shoot yield | Bamboo shoot yield | Bamboo timber yield |
| Extremely important | 9 |  |  |  |
|  | 8 |  |  |  |
| Quite important | 7 |  |  |  |
|  | 6 |  |  |  |
| Obviously important | 5 |  |  |  |
|  | 4 |  |  |  |
| Slightly important | 3 |  |  |  |
|  | 2 |  |  |  |
| Equally important | 1 |  |  |  |
|  | 1/2 |  |  |  |
| Slightly unimportant | 1/3 |  |  |  |
|  | 1/4 |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |
|  | 1/6 |  |  |  |
| Quite unimportant | 1/7 |  |  |  |
|  | 1/8 |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |
|  | | Bamboo timber yield | Forest color | Forest color |

Table S7-9 The importance judgement of Element layer in Ecological function

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Importance | Score | Ecological function | | | | | | | | | |
| Crown interception | Crown interception | Crown interception | Crown interception | Litter thickness | Litter thickness | Litter  thickness | Soil permeability | Soil permeability | Soil N content |
| Extremely important | 9 |  |  |  |  |  |  |  |  |  |  |
|  | 8 |  |  |  |  |  |  |  |  |  |  |
| Quite important | 7 |  |  |  |  |  |  |  |  |  |  |
|  | 6 |  |  |  |  |  |  |  |  |  |  |
| Obviously important | 5 |  |  |  |  |  |  |  |  |  |  |
|  | 4 |  |  |  |  |  |  |  |  |  |  |
| Slightly important | 3 |  |  |  |  |  |  |  |  |  |  |
|  | 2 |  |  |  |  |  |  |  |  |  |  |
| Equally important | 1 |  |  |  |  |  |  |  |  |  |  |
|  | 1/2 |  |  |  |  |  |  |  |  |  |  |
| Slightly unimportant | 1/3 |  |  |  |  |  |  |  |  |  |  |
|  | 1/4 |  |  |  |  |  |  |  |  |  |  |
| Obviously unimportant | 1/5 |  |  |  |  |  |  |  |  |  |  |
|  | 1/6 |  |  |  |  |  |  |  |  |  |  |
| Quite unimportant | 1/7 |  |  |  |  |  |  |  |  |  |  |
|  | 1/8 |  |  |  |  |  |  |  |  |  |  |
| Extremely unimportant | 1/9 |  |  |  |  |  |  |  |  |  |  |
|  | | Litter thickness | Soil permeability | Soil N content | Bamboo forest biomass | Soil permeability | Soil N content | Bamboo forest biomass | Soil N content | Bamboo forest biomass | Bamboo forest biomass |