Study on water environmental protection technology subsidence area ecological wetland

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Abstract. Subsidence area ecological wetland not only has strong ability of water purification, but also has a strong ability of flood detention. It is the main place of plant habitat quality. Therefore, environmental protection is the focus of the subsidence area ecological wetland environmental protection work in China, in order to better protect the subsidence water environment of ecological wetland, this paper in a coal mining subsidence water environmental protection area as an example, put forward the corresponding protection measures, in order to further improve the subsidence area ecological wetland water environmental protection level.

Keywords: Subsidence area; Wetland; Water environment protection technology.

1. Introduction

With the development of economy and the quickening pace of the construction of modern society, the ecological environment of our country is under great pressure, and the environmental protection work has also become the focus of social concern. For the protection of living environment, the protection of ecological wetland in subsidence area has great value of propaganda, education and scientific research. Therefore, the protection of ecological environment in subsidence area is always the key to the protection of ecological environment in China, especially the protection of water environment. The ecological wetland in subsidence area usually covers shallow beach and deep water area, the water grass is lush, and it is a good environment for all kinds of waterfowl breath and reproduction. Therefore, the ecological wetland in subsidence area has high protection value. In order to protect the water environment of the ecological wetland in the subsidence area, the self-purification ability of the water quality in the subsidence area can be improved significantly, and the degradation of the wetland can be effectively prevented, and the favorable environment for the normal growth of animals and plants can be provided.

2. The present situation of ecological wetland water environment in a certain subsidence area.

This paper takes the coal mining subsidence area in a certain place as an example, as shown in figure 1, to study the water environment protection technology of the ecological wetland in the subsidence area. As a result of the surface subsidence, the groundwater in the subsidence area seeps out and forms the wetland. The main characteristics of the wetland are obvious, not only can the characteristics of the water environment in different subsidence periods be clearly reflected, moreover, the study of wetland pattern change and wetland vegetation evolution is of great significance [1]. The results show that there
are three main problems in the wetland water environment: (1) water quality. There are serious water pollution problems in the subsidence area, mainly because of the existence of sewage outlet in the subsidence area and the pesticide or fertilizer pollution in the surrounding planting area carried by Rain Water. (2) Water system problem. The subsidence area is composed of two closed and relatively independent wetland units in the east and west, which are connected to each other in anhydrous system, and lack of drainage system structure around the subsidence area, together with many soil extraction operations around the subsidence area. As a result, there are many reservoirs around it, which reduces the connectivity of the subsidence area. (3) The water bank problem. Due to the disturbance of grazing and the construction of roads, the ecological function of the subsidence area has disappeared rapidly.

Fig. 1 Ecological wetland in a coal mining subsidence area

3. The principle of water environment protection of ecological wetland in subsidence area

3.1. The operational principle
This paper synthetically analyzes the carrying capacity, sensitivity, scarcity and value of protection of various resources in the wetland, and takes special planning according to different threat factors. Mainly includes the protection scope, the protection object, the protection measure and so on. In short, the principle of maneuverability is to improve the operability of environmental protection technology according to different types and different needs of wetland ecological resources and systems.

3.2. The principle of integrity
As its name implies, refers to the conservation of wetland ecosystems, cultural resources and self-contained environmental resources as a whole, which is further refined on the basis of holistic protection, According to different environmental conditions and protection needs, take targeted protection countermeasures [2].

3.3. The principle of combining protection with restoration
the principle of combining protection with restoration is to protect as much as possible the nature, integrity and diversity of wetland resources when protecting the wetland environment, thus making it the original ecological environment of the wetland, Natural systems and animal and plant environments provide protection; On this basis, effective measures are taken to restore the wetland environment and optimize the water resources environment and the living environment of animals and plants.
4. Technical countermeasures for water environment protection of ecological wetland in subsidence area

4.1. Water quality Protection Countermeasures
Aiming at the problem of environmental water quality pollution in this subsidence area, in the process of treatment, The following three kinds of protection measures should be adopted: (1) effective control of water pollution sources. The main reason for the water pollution in the wetland is that the pesticide or fertilizer residue in the surrounding farmland and seedling planting is carried by Rain Water. Therefore, the control of water pollution sources should focus on the pollution control of reclaimed farmland around wetlands. Relevant staff need to set up a reasonable interception biological purification ditch near the reclaimed farmland and plant vegetation on the purification ditch, using vegetation to cut off the suspended matter of Rain Water and purify Rain Water, which is discharged into the wetland lake; At the same time, the sewage outlet is forbidden in the wetland. (2) The abandoned farmland is stripped off. Relevant workers need to peel off the topsoil of abandoned agricultural fields in subsidence areas, and then reduce the content of pollutants in the soil, and also carry out scientific treatment of agricultural wastes, soil residual pollution sources, weeds and so on. In addition, the relevant personnel should be arranged to patrol around the wetland regularly and strictly prohibit grazing. (3) Wetland water quality purification work should be carried out. Through making effective plan, innovating water quality purification technology and improving water quality purification process, the water quality purification level of wetland can be raised.

4.2. Water system protection countermeasures
In view of the actual problems of the wetland water system in the subsidence area, the following two technical countermeasures should be adopted to protect them: (1) to realize the connectivity between the water systems. The workers can establish a canal or water system between the two subsidence zones, and connect the two subsidence areas by connecting the pipelines. At the same time, the construction of water supply project should be carried out in order to change "dead water" into "active water" through the difference of water level, so as to improve the self-purification ability of wetland lakes [3]. (2) Effective measures should be taken to replenish water system. The workers need to make full use of the large precipitation characteristics of the wetland in the subsidence area and make use of the natural precipitation to make up the wetland water. At the same time, the appropriate use of river water, mine water, and other technologies, in order to ensure sufficient wetland water supply, to prevent the wetland water eutrophication and other defects. In the process of mine water supply, it is necessary to purify the well water and introduce it into the lake. In the course of taking river water supply measures, it is necessary to build diversion canal and set up water level control sluice at the same time. River water supply is the main measure of water supply in dry season. Attention should be paid to the relevant personnel to regularly clean up the river to prevent it from clogging and to ensure the smooth progress of the water supply work.

4.3. Water bank protection countermeasures
In the wetland water bank protection in the subsidence area, the staff need to formulate specific and meticulous protection measures according to different geographical locations. Concretely speaking: (1) the wetland in the eastern subsidence area of the wetland is closed to grass and forbid all kinds of outside interference; At the same time, based on the original natural conditions of the wetland, the natural plants in the area are restored, thus providing protection for the ecological function of the wetland itself [4]. (2) To protect the coastal roads of the wetland in the western subsidence area. Ecological slope protection road construction is planned to build ecological slope protection with length of 3km. In the steep-moving areas, workers should use natural materials such as stone and vegetation to build ecological slope protection to ensure the natural growth of vegetation, and in the actual construction process, according to the topographic characteristics and vegetation growth needs of different areas, The combination construction of many kinds of materials can prevent soil and water loss and prevent flood.
(3) Vegetation construction is carried out in the areas where there is subsidence in the near future. The recent subsidence occurred in the southern part of the subsidence area, expanding the wetland boundary [5]. Therefore, it is necessary for the staff to make a comprehensive analysis of the hydrogeological situation and settlement prediction information of the wetland in the recent subsidence area, and to formulate a more targeted vegetation construction plan. In this subsidence area, it is necessary to combine wet herbaceous plants with octopus plants.

Considering the factors such as subsidence prediction, beach texture, hydrological soil conditions and so on, we can adopt the form of "wet herbaceous plant community of octopus plant community", and combine the vegetation of lakeshore zone into one body. A complete wetland ecosystem is formed, which can stabilize the lake bank and improve the ecological benefit and landscape effect.

5. Conclusion

Taking a coal mining subsidence area as an example, this paper introduces the present situation of the water environment of the ecological wetland in the subsidence area. Based on the analysis of the principle of water environment protection of the ecological wetland in the subsidence area, the technical countermeasures for the water environment protection of the ecological wetland in the subsidence area are put forward. Mainly include water quality protection, water system protection and shore protection. In a word, the water environment protection of the ecological wetland in subsidence area is not only related to the habitat and reproduction of all kinds of waterfowl in the ecosystem, but also has a direct impact on the protection of the whole ecological environment of our country, so the relevant personnel must pay enough attention to it. In order to improve the ecological environment of our country, we should strengthen the protection of wetland ecological environment in subsidence area and improve its water quality purification ability.

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