

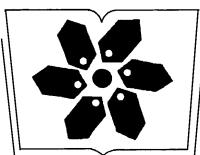
第四十二卷 第十期 1101-1110

www.ecologica.cn 科学出版社

中国生态学学会  
中国科学院生态环境研究中心 主办

科学出版社  
出版  
Science Press

多方知库  
Eco-Environmental  
Knowledge Web



中国科学院科学出版基金资助出版

# 生态学报 (SHENTAI XUEBAO)

第 43 卷 第 10 期 2023 年 5 月 (半月刊)

## 目 次

### 生态保护修复领域优先选题专栏

- 以疏勒河流域为例的“山水林田湖草”生态修复多尺度耦合框架及方法 ..... 赵金羽,萨 娜,付 晓,等 (3841)  
粤港澳大湾区城市群生态保护优先区识别研究 ..... 陈康富,吴隽宇 (3855)  
包容性治理:中国国家公园治理新思路 ..... 马 婷,钟林生,虞 虎,等 (3869)  
不同等级石漠化生境下石生苔藓叶绿素含量和叶绿素荧光参数研究 ..... 张恒彬,吴娇娇,余春娅,等 (3882)  
典型农作措施对沙溪庙组壤质紫色土坡耕地径流氮流失的影响 ..... 李天阳,何丙辉,张海香,等 (3894)  
洱海湿地草甸土退化过程土壤氮矿化演变特征 ..... 陈 好,马维伟,龙永春,等 (3906)  
喀斯特多山城市生境质量对土地利用变化的时空响应——以贵阳市为例 ..... 魏文飞,包 玉,王志泰,等 (3920)  
不同气候区绿色屋顶蒸散发模拟研究 ..... 闫 靖,张守红,章孙逊,等 (3936)  
基于系统发育及功能性状的不同坡向荒漠植物群落构建研究——以博湖县沙化封禁保护区为例 ..... 马紫荆,刘 彬,王军强,等 (3946)  
大兴安岭不同纬度兴安落叶松生长对干旱适应性及生长衰退的差异 ..... 阎 弘,孙滢洁,周婉莹,等 (3958)  
生计资本对国家重点生态功能区农户受偿意愿的影响 ..... 罗万云,周 杨,王福博 (3971)  
基于 SD 模型的晋北退耕还林工程与社会经济互馈关系研究 ..... 郑子潇,胡保安,韩海荣,等 (3984)  
**青藏高原生态安全保障与人类活动响应专栏**
- 青藏高原人类活动强度时空变化与影响因素 ..... 杨 华,徐 勇,王丽佳,等 (3995)  
青藏高原生态屏障区环境基本公共服务的非均衡性及其成因——基于青海村镇居民点的实证分析 ..... 周 侃,张 健,宋金平,等 (4010)  
青藏高原生态屏障区生活垃圾治理生态环境风险及应对路径——以青海省为例 ..... 张 健,周 侃,陈好凡 (4024)  
青藏高原区域开发强度与生态安全的时空耦合演进 ..... 陈佳锐,李佳洺,马仁锋,等 (4039)  
2000—2021 年青藏高原生长季植被敏感性的时空变异 ..... 陈甲豪,吴 凯,胡中民,等 (4054)  
云南拉沙山黑白仰鼻猴对种子传播潜力的评估 ..... 邓云丹,牛 鑫,和育超,等 (4066)

- 省域视角下中国森林碳汇空间外溢效应与影响因素 ..... 付 伟,李 龙,罗明灿,等 (4074)  
呼包鄂榆城市群耦合空间碳排放生态网络构建 ..... 耿瑜爽,李 巍,乐荣武 (4086)  
扎龙湿地藻类优势种生态位及其种间联结性动态分析 ..... 李 雪,夏 伟,范亚文,等 (4098)  
川西亚高山天然林岷江冷杉的更新结构与数量动态 ..... 陶 琼,缪 宁,杨玉婷,等 (4109)  
不同降水条件下沙鞭种群非生殖株丛空间格局分析 ..... 王志韬,任 琦,辛存林 (4121)  
天山高寒草原土壤团聚体结构与养分含量对模拟氮磷沉降的响应 ..... 梁元也,张玲雪,周小龙,等 (4130)

- 土壤细菌呼吸对西双版纳热带森林恢复的响应 ..... 张昆凤, 王邵军, 张路路, 等 (4142)
- 晋西黄土区土地利用对降雨入渗产流模式和优先流分布的影响试验研究 ..... 牛凤娇, 潘成忠, 崔永生, 等 (4154)
- 增温、增雨对荒漠草原植物和土壤总氮及稳定氮同位素的影响 ..... 吕广一, 贺梦婷, 徐学宝, 等 (4167)
- 南亚热带河流底栖硅藻  $\beta$  多样性及其对空间距离与环境梯度的响应——基于广义非相似性模拟的分析 ..... 谭琳, 陈慈, 朱昆鹏, 等 (4176)
- 基于随机森林模型的茹河流域水沙变化及其影响因素研究 ..... 韩建纯, 李鹏, 杨志, 等 (4190)
- 国家公园农户对野生动物肇事保险购买意愿及其影响因素——以大熊猫国家公园为例 ..... 马奔, 严冬, 温亚利 (4202)
- 社会-生态综合视角下海岸带生态监管框架与应用——以深圳为例 ..... 李佳雨, 钱雨果, 周伟奇, 等 (4212)
- 北部湾鱼类碳、氮、磷生态化学计量特征 ..... 王才广, 朱亮, 黄亮亮, 等 (4226)
- 长江安庆段航道整治对长江江豚数量和分布的时空影响 ..... 陈敏敏, 张康, 张平, 等 (4242)
- 基于最大熵模型预测气候变化下河蚬在中国的潜在分布 ..... 唐杨欣, 皮杰, 刘新华, 等 (4250)
- 驯养林麝泌香生理反应时间与年龄、地域分布的关系 ..... 王永奇, 李斐然 (4260)
- 准噶尔盆地荒漠景观不同地貌类型鼠、蚤多样性及分布特征 ..... 曹乃欣, 张飞, 李博, 等 (4270)
- 城市建筑屋顶光伏发电潜力评估方法和模型 ..... 李泞吕, 赵方凯, 陈利顶 (4284)
- 专论与综述**
- 陆地生态系统碳汇评估方法研究进展 ..... 刘坤, 张慧, 孔令辉, 等 (4294)
- 流域生态系统服务和水土资源匹配研究进展 ..... 孙宝娣, 于德湖, 崔东旭 (4308)
- 植物光合与呼吸过程  $\text{CO}_2$  及其  $\delta^{13}\text{C}$  的变异特征与影响因素研究进展 ..... 魏杰, 王晶苑, 温学发 (4319)

期刊基本参数:CN 11-2031/Q \* 1981 \* m \* 16 \* 492 \* zh \* P \* ¥ 90.00 \* 1510 \* 40 \* 2023-05



**封面彩图提供:** 徐卫华 中国科学院生态环境研究中心 E-mail: xuweihua@rcees.ac.cn

**致谢:** 青藏高原生态安全保障与人类活动响应专栏 得到国家第二次青藏高原综合科学考察研究专项的“生态安全保障的地域功能类型与区划”专题(No.2019QZKK0406)等项目资助;由中国科学院地理科学与资源研究所和《生态学报》编辑部共同组稿。

**ACTA ECOLOGICA SINICA Vol.43, No.10 May, 2023 (Semimonthly)**  
**CONTENTS**

**The Column of Priority Topics in the Field of Ecological Protection and Restoration**

Multi-scale coupling framework and method for mountains-rivers-forests-farmlands-lakes-grasslands ecological restoration projects:

A case study of Shule River Basin ..... ZHAO Jinyu, SA Na, FU Xiao, et al (3841)

Identification of ecological conservation priority areas in urban agglomeration of Guangdong-Hong Kong-Macao Greater Bay Area ..... CHEN Kangfu, WU Juanyu (3855)

Inclusive governance: a new idea for national park governance in China ..... MA Ting, ZHONG Linsheng, YU Hu, et al (3869)

Chlorophyll content and fluorescence parameters of epilithic mosses in habitats of different rocky-desertification grades ..... ZHANG Hengbin, WU Jiaojiao, YU Chunya, et al (3882)

Effects of representative agricultural measures on runoff nitrogen loss in loamy purple sloping croplands originating from Shaximiao Group ..... LI Tianyang, HE Binghui, ZHANG Haixiang, et al (3894)

Evolution characteristics of soil nitrogen mineralization during meadow soil degradation of Gahai wetland ..... CHEN Hao, MA Weiwei, LONG Yongchun, et al (3906)

Spatio-temporal responses of urban environment quality to land use change in mountainous cities of Karst areas ..... WEI Wenfei, BAO Yu, WANG Zhitai, et al (3920)

Simulation of evapotranspiration from green roofs in different climatic zones ..... YAN Jing, ZHANG Shouhong, ZHANG Sunxun, et al (3936)

Construction of desert plant communities with different slope orientations based on phylogenetic and functional traits: Example of desertification closure reserve in Bohu County ..... MA Zijing, LIU Bin, WANG Junqiang, et al (3946)

Distinctions in drought adaptability and growth decline of *Larix gmelinii* at different latitudes in Greater Khingan Mountains ..... YAN Hong, SUN Yingjie, ZHOU Wanying, et al (3958)

Impact of livelihood capital on farmers' willingness to receive compensation in national key ecological function areas ..... LUO Wanyun, ZHOU Yang, WANG Fubo (3971)

Research on the relationship between Grain for Green Project and social economy in northern Shanxi based on system dynamics model ..... ZHENG Zixiao, HU Baoan, HAN Hairong, et al (3984)

**Ecological security guarantee and human activity response in the Qinghai-Tibet Plateau**

Spatio-temporal variation of human activity intensity and its driving factors on the Qinghai-Tibet Plateau ..... YANG Hua, XU Yong, WANG Lijia, et al (3995)

Disequilibrium and its causes on the environmental basic public services in the Qinghai-Tibet Plateau ecological barrier zone:

An empirical analysis of the villages in Qinghai Province ..... ZHOU Kan, ZHANG Jian, SONG Jinping, et al (4010)

Risk assessment and optimization of domestic waste treatment in the Qinghai-Tibet Plateau ecological barrier zone: A case study of Qinghai Province ..... ZHANG Jian, ZHOU Kan, CHEN Yufan (4024)

Spatio-temporal coupling between regional development intensity and ecological security on the Qinghai-Tibet Plateau, China ..... CHEN Jiarui, LI Jiaming, MA Renfeng, et al (4039)

Spatio-temporal variability of vegetation sensitivity on the Qinghai-Tibet Plateau during the growing season from 2000 to 2021 ..... CHEN Jiahao, WU Kai, HU Zhongmin, et al (4054)

Evaluation of the seed dispersal ability of *Rhinopithecus bieti* in M. Lasha, Yunnan ..... DENG Yundan, NIU Xin, HE Yuchao, et al (4066)

Spatial spillover effects and influencing factors of forest carbon sink in China from provincial perspective ..... FU Wei, LI Long, LUO Mingcan, et al (4074)

Ecological network construction of coupling spatial carbon emissions in the Hohhot-Baotou-Ordos-Yulin urban agglomeration ..... GENG Yushuang, LI Wei, YUE Rongwu (4086)

- Dynamic analysis of niche and interspecific association of dominant algae species in Zhalong wetland ..... LI Xue, XIA Wei, FAN Yawen, et al (4098)
- Regeneration structure and dynamics of Minjiang fir in four typical natural forest types in subalpine area in western Sichuan, China ..... TAO Qiong, MIAO Ning, YANG Yuting, et al (4109)
- Spatial pattern of *Psammochloa villosa* asexual cluster populations under different precipitation conditions ..... WANG Zhitao, REN Heng, XIN Cunlin (4121)
- Response of soil aggregate structure and nutrient content to the simulated nitrogen and phosphorus deposition in an alpine steppe of Tianshan Mountains ..... LIANG Yuanye, ZHANG Lingxue, ZHOU Xiaolong, et al (4130)
- Response of soil bacterial respiration to tropical forest restoration in Xishuangbanna, China ..... ZHANG Kunfeng, WANG Shaojun, ZHANG Lulu, et al (4142)
- Experimental investigation to the effect of different land-use on rainfall infiltration runoff patterns and preferential flow distribution in the Loess area of western Shanxi Province ..... NIU Fengjiao, PAN Chengzhong, CUI Yongsheng, et al (4154)
- Effects of warming and increasing precipitation on total nitrogen and stable nitrogen isotopes of plants and soil in the desert steppe ..... LÜ Guangyi, HE Mengting, XU Xuebao, et al (4167)
- $\beta$  diversity of benthic diatoms and its responses to spatial distance and environmental gradients in a subtropical river, southern China: GDM based analysis ..... TAN Lin, CHEN Ci, ZHU Kunpeng, et al (4176)
- Variation and influencing factors of runoff and sediment in Ru River Basin based on random forest model ..... HAN Jianchun, LI Peng, YANG Zhi, et al (4190)
- Farmers' willingness and influencing factors on purchasing wildlife accident insurance in national parks: A case study of Giant Panda National Park, China ..... MA Ben, YAN Dong, WEN Yali (4202)
- A framework for coastal zone ecosystem monitoring and management from an integrated social-ecological perspective and its application in Shenzhen, China ..... LI Jiayu, QIAN Yuguo, ZHOU Weiqi, et al (4212)
- Ecological stoichiometry characteristics of carbon, nitrogen and phosphorus in fishes from Beibu Gulf, southern China ..... WANG Caiguang, ZHU Liang, HUANG Liangliang, et al (4226)
- Spatio-temporal effects of waterway regulation engineering on population abundance and distribution of the Yangtze finless porpoise in Anqing section of the Yangtze River ..... CHEN Minmin, ZHANG Kang, ZHANG Ping, et al (4242)
- Predicting potential distribution of *Corbicula fluminea* under climate change scenarios using MaxEnt model ..... TANG Yangxin, PI Jie, LIU Xinhua, et al (4250)
- Relationship between physiological response time and age, geographical distribution of captive forest musk deer(*moschus berezovskii*) ..... WANG Yongqi, LI Feiran (4260)
- Study on Diversity and Distribution Characteristics of Rodents and Fleas in Different Landforms of Desert Landscape in Junggar Basin ..... CAO Naixin, ZHANG Fei, LI Bo, et al (4270)
- Review of rooftop solar photovoltaic electrical potential estimation: approaches and models ..... LI Ningli, ZHAO Fangkai, CHEN Liding (4284)
- Review and Monograph**
- An overview of terrestrial ecosystem carbon sink assessment methods towards achieving carbon neutrality in China ..... LIU Kun, ZHANG Hui, KONG Linghui, et al (4294)
- A review of ecosystem services and water-land matching for the river basin ..... SUN Baodi, YU Dehu, CUI Dongxu (4308)
- Research progress on variations and influencing factors of CO<sub>2</sub> and its  $\delta^{13}\text{C}$  during photosynthesis and respiration in plants ..... WEI Jie, WANG Jingyuan, WEN Xuefa (4319)

# 《生态学报》

## Acta Ecologica Sinica

入选“中国科技期刊卓越行动计划”；入围“中国科协生态学领域高质量科技期刊 T1 区”

《生态学报》是由中国科学技术协会主管，中国生态学学会、中国科学院生态环境研究中心主办的生态学高级专业学术期刊，半月刊，主编傅伯杰院士。本刊坚持百花齐放、百家争鸣，产生于科学性、立足于学术性、着眼于实践性、服务于社会性的办刊宗旨，依靠和团结广大生态学科研工作者，为生态学基础理论和应用研究搭建国内一流的学术交流平台，促进生态学研究深入发展，为我国培养和造就生态学科研人才，为国民经济建设和发展提供知识创新服务。

《生态学报》主要报道生态学重要基础理论和应用研究的原始创新性科研成果。所刊文章类型有：研究综述；研究论文；学术信息与动态；生态学新理论、新方法、新技术介绍；新书评介及开放实验室介绍等。《生态学报》为国内一流领军期刊；国际生态学 Q1 类期刊；期刊总被引频次居中国自然科学期刊第 1 名，影响因子居生态学学科中文期刊第 1 名；连年获得“中国百种杰出学术期刊”、“中国最具国际影响力学术期刊”和“期刊数字影响力 100 强”等荣誉称号；获得中国科协 TOP50 科技期刊和中国科协中文精品科技期刊建设项目资助；中国科协生态学领域高质量科技期刊 T1 区期刊；中国科技期刊卓越行动计划入选期刊。

办公电话：010-62941099

E-mail: shengtaixuebao@rcees.ac.cn

投稿网址：[www.ecologica.cn](http://www.ecologica.cn)

执行副主编 孔红梅 责任编辑 刘昕 全元 谢武双 于恩逸 朱晶莹 编辑 宗静 彭小琼

生 态 学 报  
(SHENGTAI XUEBAO)  
(半月刊 1981 年 3 月创刊)  
第 43 卷 第 10 期 (2023 年 5 月)

ACTA ECOLOGICA SINICA

(Semimonthly, Started in 1981)

Vol.43 No.10 (May, 2023)

编 辑 《生态学报》编辑部  
地址：北京海淀区双清路 18 号  
邮政编码：100085  
电话：(010)62941099  
[www.ecologica.cn](http://www.ecologica.cn)  
[shengtaixuebao@rcees.ac.cn](mailto:shengtaixuebao@rcees.ac.cn)

主 编 傅伯杰  
主 管 中国科学技术协会  
主 办 中国生态学学会  
中国科学院生态环境研究中心  
地址：北京海淀区双清路 18 号  
邮政编码：100085

出 版 科 学 出 版 社  
印 刷 北京宝昌彩色印刷有限公司  
国内发行 全国各地邮局  
发行代号 82-7  
国外发行 中国国际图书贸易总公司  
发行代号 M670  
订 阅 科学出版社期刊发行部  
010-64017032, 010-64017539  
或扫描封底二维码  
广告经营 京海工商广字第 8013 号

Edited by Editorial board of ACTA ECOLOGICA SINICA  
Add: 18, Shuangqing Street, Haidian, Beijing 100085, China  
Tel: (010) 62941099  
[www.ecologica.cn](http://www.ecologica.cn)  
[shengtaixuebao@rcees.ac.cn](mailto:shengtaixuebao@rcees.ac.cn)

Editor-in-chief FU Bojie  
Supervised by China Association for Science and Technology  
Sponsored by Ecological Society of China  
Research Center for Eco-environmental Sciences, CAS  
Add: 18, Shuangqing Street, Haidian, Beijing 100085, China

Published by Science Press  
Add: 16 Donghuangchenggen North Street,  
Beijing 100717, China

Printed by Beijing Baochang Color Printing Co., Ltd.,  
Beijing 100094, China

Subscribe by Science Press  
Tel: 010-64017032, 010-64017539  
E-mail: [journal@cspg.net](mailto:journal@cspg.net)

Domestic issue All Local Post Offices in China 82-7  
Foreign issue China International Book Trading M670 Corporation  
Add: P.O.Box 399 Beijing 100044, China

ISSN 1000-0933  
9 71000 093231



ISSN 1000-0933 CN 11-2031/Q 定价 90.00 元