



QK2148374



生态学报

ACTA ECOLOGICA SINICA

第41卷 第21期 Vol. 41 No. 21 2021

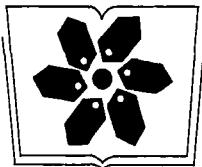
ISSN 1000-0933 CN 11-2031/Q



中国生态学会
中国科学院生态环境研究中心
主办
万方数据

科学出版社
Science Press
出版

万方知库
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 41 卷 第 21 期 2021 年 11 月 (半月刊)

目 次

专论与综述

社会-生态网络方法研究进展 张萌萌, 王帅, 傅伯杰, 等 (8309)

南极海洋生物肠道微生物研究进展 朱国平, 王敏 (8320)

悬浮物对造礁石珊瑚营养方式的影响及其适应性研究进展 罗勇, 俞晓磊, 黄晖 (8331)

研究论文

近 20 年防风固沙重点生态功能区植被动态分析 胡玲, 孙聪, 范闻捷, 等 (8341)

低碳导向下土地覆被演变模拟——以深圳市为例 何海珊, 赵宇豪, 吴健生 (8352)

中国农业环境效率时空演变及其驱动因素 徐维祥, 郑金辉, 李续双 (8364)

基于土地利用的粤港澳大湾区生态系统服务价值及承载力演变分析 张杰, 李清泉, 吴祥茵, 等 (8375)

生态系统服务与贫困关联视角下生态扶贫策略的实施路径 郭强, 谢苗苗, 王回苗, 等 (8387)

林业资源型城市生态-经济-社会协调发展的定量测度——以黑龙江省伊春市为例 姜晓艳, 吴相利 (8396)

基于景观生态学的辽宁中部城市群绿色基础设施 20 年时空格局演变 李空明, 李春林, 曹建军, 等 (8408)

基于 Budyko 假设的洮河与大夏河径流变化归因识别 杨林, 赵广举, 穆兴民, 等 (8421)

砚瓦川流域河川基流变化规律及其驱动因素 夏露, 毕如田, 宋孝玉, 等 (8430)

基于多源数据空间分析的国家公园管控分区研究——以钱江源国家公园体制试点区为例 崔晓伟, 杨明星, 孟宇辰, 等 (8443)

基于熵理论的山东省国家湿地公园管理绩效评价 赵志国, 杨立, 王青, 等 (8456)

会仙岩溶湿地 4 种覆被下土壤酶活性和微生物生物量 斯振江, 贾远航, 潘复静, 等 (8464)

Pb 和 Cd 对森林土壤细菌功能多样性及群落结构的影响 李大乐, 陈建文, 张红, 等 (8472)

南疆四种盐生植物根际土壤真菌群落结构特征 李明源, 王继莲, 周茜, 等 (8484)

黄河口潮间带沉积物细菌群落结构特征 尹霞, 李思琦, 尚天微, 等 (8496)

水沙条件及氮输入对黄河口滨岸潮滩湿地碱蓬和土壤¹⁵N 吸收特征的影响 宋红丽, 刘前进, 安娟, 等 (8507)

荒漠草原植物多样性恢复与土壤生境的关系 余轩, 王兴, 吴婷, 等 (8516)

林冠氮添加和林下植被去除对杉木林土壤有机碳组分的影响 习丹, 翁浩东, 胡亚林, 等 (8525)

桂西北喀斯特峰丛洼地不同植被恢复方式下土壤有机碳组分变化特征 赵元, 张伟, 胡培雷, 等 (8535)

- 大气氮沉降对中亚草地生态系统净初级生产力的影响 韩其飞,李莹莹,彭开兵,等 (8545)
不同混交比例对杉木和大叶榉幼苗功能性状的影响 查美琴,成向荣,虞木奎,等 (8556)
天目山常绿落叶阔叶林群落垂直结构与群落整体物种多样性的关系 ... 楼一恺,范 忆,戴其林,等 (8568)
不同积水生境对河南黄河湿地植物多样性的影响 齐 睿,王春平,李子豪,等 (8578)
太行山南段连翘群落结构及其影响因子研究 郭佳佳,张雷廷,车建芳,等 (8589)
模拟降雨下黄土坡面水沙过程对3种灌草植被垂直结构变化的响应 赵炯昌,卫 伟,段兴武 (8602)
谷子对干旱胁迫的生理生态响应 严加坤,张宁宁,张岁岐 (8612)
内蒙古大兴安岭林草交错带景观动态分析 冒许鹏,刁娇娇,范佳辉,等 (8623)
外源激素处理对三峡消落带落羽杉扦插生根的影响 陈春桦,陈雪梅,杨治华,等 (8635)
黄土高原地区森林生态系统地下生物量影响因素 胡宇美,马理辉,李 蕊,等 (8643)
全球木本植物叶片硅钙生态化学计量学特征 陈逸飞,许瑶瑶,邓博文,等 (8654)
广西扶绥白头叶猴对栖息地的选择与利用 何雪李,陆施毅,黄中豪,等 (8664)
山地隔离和空间距离对高黎贡山灰腹地莺(*Tesia cyaniventer*)鸣唱特征的影响
..... 冯莹莹,梁 丹,李兴权,等 (8673)

学术信息与动态

- 全球植物修复研究文献计量分析 肖鹏飞,吴德东 (8685)

期刊基本参数:CN 11-2031/Q * 1981 * m * 16 * 388 * zh * P * ¥ 90.00 * 1510 * 36 * 2021-11



封面彩图提供: 许易春 E-mail: kellerxu2008@gmail.com

ACTA ECOLOGICA SINICA Vol.41, No.21 November, 2021 (Semimonthly)

CONTENTS

Review and Monograph

- Study on social-ecological network method: Progress and prospect ZHANG Mengmeng, WANG Shuai, FU Bojie, et al (8309)
Gut microbes of Antarctic marine organism: a review ZHU Guoping, WANG Min (8320)
Effect of suspended sediment on the nutritional mode of scleractinian corals and their adaptability: state of knowledge and research LUO Yong, YU Xiaolei, HUANG Hui (8331)

Research Paper

- Spatio-temporal dynamics of vegetation in key ecological function zone of wind-break and sand-fixation over the last 20 years HU Ling, SUN Cong, FAN Wenjie, et al (8341)
Simulation of urban landscape pattern under the Influence of Low Carbon: A Case Study of Shenzhen HE Haishan, ZHAO Yuhao, WU Jiansheng (8352)
Spatio-temporal evolution and driving factors of agricultural environmental efficiency in China XU Weixiang, ZHENG Jinhui, LI Xushuang (8364)
Evolution of the ecosystem services value and carrying capacity in the Guangdong-Hong Kong-Macao Greater Bay Area based on land use changes ZHANG Jie, LI Qingquan, WU Xiangyin, et al (8375)
Implementation path of ecological poverty alleviation from the perspective of the relationship between ecosystem services and poverty GUO Qiang, XIE Miaomiao, WANG Huihui, et al (8387)
Quantitative investigation of the coordinated development of ecology-economy-society in forest resource-based city: A case study of Yichun, Heilongjiang Province JIANG Xiaoyan, WU Xiangli (8396)
Spatiotemporal evolution characteristics of urban green infrastructure in central Liaoning urban agglomeration during the past 20 years based on landscape ecology and morphology LI Kongming, LI Chunlin, CAO Jianjun, et al (8408)
Attribution of runoff variations in Tao River and Daxia River based on Budyko Hypothesis YANG Lin, ZHAO Guangju, MU Xingmin, et al (8421)
Study on the variation of baseflow and its driving factors in the Yanwachuan watershed XIA Lu, BI Rutian, SONG Xiaoyu, et al (8430)
Study on the control zoning of National Parks based on spatial analysis of multi-source data: Take Qianjiangyuan National Park System Pilot Area as an example CUI Xiaowei, YANG Mingxing, MENG Yuchen, et al (8443)
Quantitative assessment of management effectiveness of National Wetland Parks in Shandong Province based on entropy theory ZHAO Zhiguo, YANG Li, WANG Qing, et al (8456)
Soil enzyme activities and microbial biomasses under 4 covers in Huixian karst wetland JIN Zhenjiang, JIA Yuanhang, PAN Fujing, et al (8464)
Effects of Pb and Cd on forest soil bacterial functional diversity and community structure LI Dale, CHEN Jianwen, ZHANG Hong, et al (8472)
Analysis on the rhizosphere fungal community structure of four halophytes in Southern Xinjiang LI Mingyuan, WANG Jilian, ZHOU Qian, et al (8484)
Characteristics of bacterial community structure in intertidal sediments of the Yellow River estuary YIN Xia, LI Siqi, SHANG Tianwei, et al (8496)
¹⁵N absorption characteristics for *Suaeda salsa* and sediment under different water-sediment conditions and nitrogen input in the Yellow River delta SONG Hongli, LIU Qianjin, AN Juan, et al (8507)
Relationship between restoration of plant diversity and soil habitat in desert steppe YU Xuan, WANG Xing, WU Ting, et al (8516)
Effects of canopy nitrogen addition and understory removal on soil organic carbon fractions in a Chinese fir plantation XI Dan, WENG Haodong, HU Yalin, et al (8525)

| | |
|---|---|
| Responses of soil organic carbon fractions to different vegetation restoration in a typical karst depression | ZHAO Yuan, ZHANG Wei, HU Peilei, et al (8535) |
| Effects of atmospheric nitrogen deposition on net primary productivity of grassland ecosystem in Central Asia | HAN Qifei, LI Yingying, PENG Kaibing, et al (8545) |
| Effects of mixing proportion on functional traits of <i>Cunninghamia lanceolata</i> and <i>Zelkova schneideriana</i> seedling | ZHA Meiqin, CHENG Xiangrong, YU Mukui, et al (8556) |
| Relationship between vertical structure and overall species diversity in an evergreen deciduous broad-leaved forest community of Tianmu Mountain Natural Reserve | LOU Yikai, FAN Yi, DAI Qilin, et al (8568) |
| Difference of plant diversity in different waterlogging habitats in the Yellow River wetland in Henan Province | QI Rui, WANG Chunping, LI Zihao, et al (8578) |
| Analysis of <i>Forsythia suspensa</i> community structure and influencing factors in the southern section of Taihang Mountain | GUO Jiajia, ZHANG Leiting, CHE Jianfang, et al (8589) |
| Response of the runoff and sediment process on loess slope to the vertical structure changes of three shrub and grass vegetations under simulated rainfall | ZHAO Jiongchang, WEI Wei, DUAN Xingwu (8602) |
| Physiological and ecological responses of foxtail millet to drought stress | YAN Jiakun, ZHANG Ningning, ZHANG Suiqi (8612) |
| Dynamic analysis and prediction of landscape pattern in Daxinganling forest-grass ecotone in the Inner Mongolia | MAO Xupeng, DIAO Jiaoqiao, FAN Jiahui, et al (8623) |
| Effects of exogenous hormone on rooting of <i>Taxodium distichum</i> cuttings from the hydro-fluctuation belt of the Three Gorges Reservoir | CHEN Chunhua, CHEN Xuemei, YANG Zhihua, et al (8635) |
| Factor analysis of underground biomass in forest ecosystem on the Loess Plateau | HU Yumei, MA Lihui, LI Rui, et al (8643) |
| Stoichiometric characteristics of silicon and calcium in leaves of woody plants on a global scale | CHEN Yifei, XU Yaoyao, DENG Bowen, et al (8654) |
| Habitat selection and use of a group of white-headed langurs (<i>Trachypithecus leucocephalus</i>) in Fusui, Guangxi, China | HE Xueli, LU Shiyi, HUANG Zhonghao, et al (8664) |
| Effects of mountain barrier and spatial distance on acoustic characteristics of a ground-dwelling forest bird (<i>Tesia cyaniventer</i>) in the Gaoligong Mountains | FENG Yingying, LIANG Dan, LI Xingquan, et al (8673) |

《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, 010-62843362 E-mail: shengtaixuebao@rcees.ac.cn

投稿网址：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
(SHENCTAI XUEBAO)
(半月刊 1981 年 3 月创刊)
第 41 卷 第 21 期 (2021 年 11 月)

ACTA ECOLOGICA SINICA
(Semimonthly, Started in 1981)
Vol. 41 No. 21 (November, 2021)

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
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
ACTA ECOLOGICA SINICA
Add: 18, Shuangqing Street, Haidian, Beijing 100085, China
Tel: (010) 62941099
www.ecologica.cn
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

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
21

9 771000 093217



ISSN 1000-0933

CN 11-2031/Q

定价 90.00 元