



生态学报

ACTA ECOLOGICA SINICA

第41卷 第3期 Vol. 41 No. 3 2021

ISSN 1000-0933 CN 11-2031/Q

QK2100512

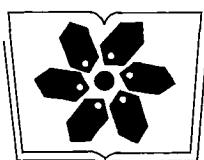


中国生态学会
中国科学院生态环境研究中心
万方数据
主办

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 3 期 2021 年 2 月 (半月刊)

目 次

青藏高原国家公园群建设研究专栏

- 青藏高原国家公园群地域功能与结构研究 虞虎, 钟林生, 樊杰 (823)
青藏高原国家公园群生态系统完整性与原真性评估框架 刘晓娜, 刘春兰, 张丛林, 等 (833)
青藏高原生态系统完整性远程评价与国家公园群建设时序研究 邓冉, 邵怀勇, 黄宝荣, 等 (847)
青藏高原国家公园群游憩功能的自然基础与实现路径 钟林生, 曾瑜哲, 虞虎 (861)
普达措国家公园生态安全格局构建 郑群明, 申明智, 钟林生 (874)
气候变化背景下青海省三江源地区游憩功能格局演变 曾瑜哲, 钟林生, 虞虎 (886)
珠穆朗玛峰保护地生态文化服务空间分布及评价 付晶, 高峻, 李杰, 等 (901)
喀喇昆仑山-喜马拉雅山脉生态区类型与保护地空间分布格局 高峻, 李杰, 付晶, 等 (912)

生态环境损害鉴定评估专栏

- 森林生态系统损害评估体系与管理制度研究 包蕊, 李涛, 张欣怡, 等 (924)
外来树种的耗水特征及其对环境水资源的影响 倪广艳 (934)
草原生态环境损害因果关系判定路径 于恩逸, 崔宁, 吴迪, 等 (943)
基于生态系统敏感性与生态功能重要性的高原湖泊分区保护研究——以达里湖流域为例
..... 崔宁, 于恩逸, 李爽, 等 (949)
基于景感生态学认知的生态环境损害问题辨析 吕晨璨, 张雪琦, 孙晓萌, 等 (959)
侵占城郊型林地的生态环境损害案例分析及评估方法 叶脉, 陈佳亮, 林伟彪, 等 (966)
海口市海岸带近 30 年土地利用变化的景观生态风险评价 陈心怡, 谢跟踪, 张金萍 (975)
黄河三角洲石油化工区农田土壤-玉米体系 PAHs 的分布特征及风险评价
..... 解小凡, 刘月仙, 邱慧, 等 (987)
有机污染物胁迫下白菜生理特性变化规律 杜志伟, 杨肖松, 刘月仙, 等 (998)
分子标记物在禽类粪便污染溯源中的研究及应用进展 梁红霞, 余志晟, 刘如钢, 等 (1006)
溢油事故中渔业资源损失的数值模拟评估模式 宋协法, 毕研军, 董登攀, 等 (1015)
中国旱灾风险定量评估 赵佳琪, 张强, 朱秀迪, 等 (1021)

- 黄河口碱蓬湿地土壤硫矿化特征对外源氮输入的响应 陈冰冰, 孙志高 (1032)
基于功能类群分析呼兰河口湿地浮游植物群落结构特征 贾鹏, 范亚文, 陆欣鑫 (1042)
围垦对辽东湾北部滨海湿地土壤重金属含量的影响及生态风险评价 闫晓露, 孙才志, 胡远满, 等 (1055)
2000—2017 年秦岭山地植被物候变化特征及其南北差异 邓晨晖, 白红英, 马新萍, 等 (1068)
白刺器官间非结构性碳水化合与 C:N:P 计量比的关联性 孙小妹, 何明珠, 杨睿哲, 等 (1081)
气候变化下辽宁省春玉米水热时空特征及干旱风险 曹永强, 冯兴兴, 李玲慧, 等 (1092)
生长型分类方案不同导致森林生态系统植物功能性状的统计偏差 袁泉, 曹嘉瑜, 刘建峰, 等 (1106)

| | |
|--------------------------------------------------------------|---------------------|
| 坝上地区不同年代退耕还林生境的草本层植物多样性及影响因子..... | 胡文浩,张晓婧,陈雅杰,等(1116) |
| 氮素添加对贝加尔针茅草原土壤团聚体微生物群落的影响..... | 李明,赵建宁,秦洁,等(1127) |
| 基于 MODIS-EVI 的西南地区植被覆盖时空变化及驱动因素研究 | 李美丽,尹礼昌,张园,等(1138) |
| 戴云山物种多样性与系统发育多样性海拔梯度分布格局及驱动因子..... | 李梦佳,何中声,江蓝,等(1148) |
| 温带大陆性半干旱季风气候区植被覆盖度时空变化及其地形分异研究..... | 银朵朵,王艳慧(1158) |
| 云顶山不同人工林林下植物多样性及其与土壤理化性质的关系 | 李婷婷,唐永彬,周润惠,等(1168) |
| 中国退耕还林还草对生态系统服务权衡与协同的影响 | 黄麟,祝萍,曹巍(1178) |
| 自然资本流变及其对生态系统服务价值的演变路径..... | 刘颂,戴常文(1189) |
| 城市用地扩展对生态风险影响的多情景模拟——以内蒙古呼和浩特市为例..... | 冯琰玮,甄江红,马晨阳(1199) |
| 基于景观安全格局的嘉绒藏族传统村落形态研究——以马尔康市直波村为例..... | 王禹,廖志学(1209) |
| 基于高通量测序的象山港海域黑鲷(<i>Acanthopagrus schlegelii</i>)食性分析 | 孙鹏,凌建忠,张辉,等(1221) |
| 丹江口水库秋季底栖动物群落状态和空间分布及其与环境因子的关系..... | 池仕运,赵先富,高少波,等(1229) |
| 3种不同营养水平的河流浮游植物群落结构及其与环境因子的相关性 | 代亮亮,吕敬才,周维成,等(1242) |
| 有蹄类昼夜活动时空动态——以岩羊(<i>Pseudois nayaur</i>)为例 | 陈星,胡茜茜,刘明星,等(1251) |
| 学术信息与动态 | |
| 推进生态文明建设,促进区域可持续发展——中国生态文明与可持续发展2020年学术论坛述评..... | 韩逸,赵文武,郑博福(1259) |

期刊基本参数:CN 11-2031/Q * 1981 * m * 16 * 444 * zh * P * ¥ 90.00 * 1510 * 42 * 2021-02



封面彩图提供: 陈保冬 中国科学院生态环境研究中心 E-mail: bdchen@rcees.ac.cn

ACTA ECOLOGICA SINICA Vol.41, No.3 February, 2021 (Semimonthly)
CONTENTS

Special column: Study on Qinghai-Tibet Plateau National Park Cluster Development

| | |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Regional function and spatial structure of National Park Cluster in Qinghai-Tibet Plateau | YU Hu, ZHONG Linsheng, FAN Jie (823) |
| Ecosystem integrity and authenticity assessment framework in the Qinghai-Tibet Plateau National Park Cluster | LIU Xiaona, LIU Chunlan, ZHANG Conglin, et al (833) |
| Remote assessment on ecosystem integrity of the Qinghai-Tibet Plateau and research on National Parks Group construction sequence | DENG Ran, SHAO Huaiyong, HUANG Baorong, et al (847) |
| The Natural Foundation and Realization Path of the Recreation Function of the Qinghai-Tibet plateau National Park Group | ZHONG Linsheng, ZENG Yuxi, YU Hu (861) |
| Construction of ecological security pattern in Pudacuo National Park ... | ZHENG Qunming, SHEN Mingzhi, ZHONG Linsheng (874) |
| Spatial and temporal evolution of recreational function in the Sanjiangyuan region of Qinghai Province under climate change | ZENG Yuxi, ZHONG Linsheng, YU Hu (886) |
| Spatial analysis and assessment of cultural ecosystem services at the protected area of the Mt. Qomolangma | FU Jing, GAO Jun, LI Jie, et al (901) |

| | |
|--------------------------------------------------------------------------------------------|---------------------------------------|
| Spatial patterns of ecoregions and protected areas in the Karakoram-Himalayan region | GAO Jun, LI Jie, FU Jing, et al (912) |
|--------------------------------------------------------------------------------------------|---------------------------------------|

Special column: Special Column on Identification and Assessment of Eco-Environmental Damage

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Study on the assessment and management system of forest ecosystem damage | BAO Rui, LI Tao, ZHANG Xinyi, et al (924) |
| Water use strategies of alien trees and their impacts on water resource | NI Guangyan (934) |
| A path of causality judgement of grassland eco-environmental damage | YU Enyi, CUI Ning, WU Di, et al (943) |
| Protection measures of plateau lake based on ecosystem sensitivity and importance of ecosystem function: the case of Lake Dalinor Basin | CUI Ning, YU Enyi, LI Shuang, et al (949) |
| Discrimination of eco-environment damage based on landsenses ecology cognition | LÜ Chencan, ZHANG Xueqi, SUN Xiaomeng, et al (959) |
| Case study and evaluation method of eco-environmental damage caused by occupation of suburban forest land | YE Mai, CHEN Jialiang, LIN Weibiao, et al (966) |
| Landscape ecological risk assessment of land use changes in the coastal area of Haikou City in the past 30 years | CHEN Xinyi, XIE Genzong, ZHANG Jinping (975) |
| Distribution characteristics and risk assessment of polycyclic aromatic hydrocarbons in farmland soil-corn system from oil mining area of Yellow River Delta | XIE Xiaofan, LIU Yuexian, QIU Hui, et al (987) |
| Analysis of physiological characteristics of Chinese cabbages under pyrene stress | DU Zhiwei, YANG Xiaosong, LIU Yuexian, et al (998) |
| Development and application of molecular markers on microbial source tracking for avian | LIANG Hongxia, YU Zhisheng, LIU Ruyin, et al (1006) |
| Numerical simulation evaluation model of fishery resources loss in oil spill | SONG Xiefa, BI Yanjun, DONG Dengpan, et al (1015) |
| Quantitative assessment of drought risk in China | ZHAO Jiaqi, ZHANG Qiang, ZHU Xiudi, et al (1021) |

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Effect of exogenous nitrogen enrichment on sulfur mineralization characteristics in soils of <i>Suaeda salsa</i> marsh in the Yellow River estuary, China | CHEN Bingbing, SUN Zhigao (1032) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|

| | |
|---------------------------------------------------------------------------------------------------|---------------------------------------|
| Analysis of phytoplankton structure based on different functional groups in Hulanhe Wetland | JIA Peng, FAN Yawen, LU Xinxin (1042) |
|---------------------------------------------------------------------------------------------------|---------------------------------------|

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Effect of reclamation on soil heavy metal content of coastal wetland and ecological risk assessment in Northern Liaodong Bay, China | YAN Xiaolu, SUN Caizhi, HU Yuanman, et al (1055) |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|

- Variation characteristics and its north-south differences of the vegetation phenology by remote sensing monitoring in the Qinling Mountains during 2000—2017 DENG Chenhui, BAI Hongying, MA Xinping, et al (1068)
- Correlation of non-structural carbohydrates with C:N:P stoichiometry among the organs of *Nitraria tangutorum* SUN Xiaomei, HE Mingzhu, YANG Ruizhe, et al (1081)
- Temporal and spatial variation of spring corn in Liaoning Province under climate change CAO Yongqiang, FENG Xingxing, LI Linghui, et al (1092)
- Statistical bias of plant functional traits in forest ecosystems caused by different classifications of growth form YUAN Quan, CAO Jiayu, LIU Jianfeng, et al (1106)
- Herb diversity and its impact factors in different periods from 1970s to 2000s of the returning farmland to forest project in the Bashang Area of North China HU Wenhao, ZHANG Xiaojing, CHEN Yajie, et al (1116)
- Effects of nitrogen addition on microbial community in soil aggregates of *Stipa Baicalensis* Steppe in Inner Mongolia, China LI Ming, ZHAO Jianning, QIN Jie, et al (1127)
- Spatio-temporal dynamics of fractional vegetation coverage based on MODIS-EVI and its driving factors in Southwest China LI Meili, YIN Lichang, ZHANG Yuan, et al (1138)
- Distribution pattern and driving factors of species diversity and phylogenetic diversity along altitudinal gradient on the south slope of Daiyun Mountain LI Mengjia, HE Zhongsheng, JIANG Lan, et al (1148)
- Temporal and spatial changes of vegetation coverage and its topographic differentiation in temperate continental semi-arid monsoon climate region YIN Duoduo, WANG Yanhui (1158)
- Understory plant diversity and its relationship with soil physicochemical properties in different plantations in Yunding Mountain LI Tingting, TANG Yongbin, ZHOU Runhui, et al (1168)
- The impacts of the Grain for Green Project on the trade-off and synergy relationships among multiple ecosystem services in China HUANG Lin, ZHU Ping, CAO Wei (1178)
- The evolutionary pathway of natural capital and its valuation of ecosystem services LIU Song, DAI Changwen (1189)
- Multi-scenario simulation of the impact of urban expansion on ecological risk: A case study of Hohhot City, Inner Mongolia FENG Yanwei, ZHEN Jianghong, MA Chenyang (1199)
- Research on traditional village form of Jiarong Tibetan based on landscape security pattern: a case study of Zhibo village in Barkam City WANG Yu, LIAO Zhixue (1209)
- Diet composition and feeding habits of black sea bream (*Acanthopagrus schlegelii*) in Xiangshan Bay based on high-throughput sequencing SUN Peng, LING Jianzhong, ZHANG Hui, et al (1221)
- The spatial distribution pattern of autumn macroinvertebrates in relation to environmental factors in Danjiangkou Reservoir CHI Shiyun, ZHAO Xianfu, GAO Shaobo, et al (1229)
- Phytoplankton's community structure and its relationships with environmental factors in three rivers with different nutrition levels DAI Liangliang, LÜ Jingcai, ZHOU Weicheng, et al (1242)
- A preliminary analysis on the spatio-temporal dynamic of ungulate's circadian activities: a case study of Bharal (*Pseudois nayaur*) CHEN Xing, HU Xixi, LIU Mingxing, et al (1251)

《生态学报》2021年征订启事

《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共同主办的生态学高级专业学术期刊,创刊于1981年,报道生态学领域前沿理论和原始创新性研究成果。坚持“百花齐放,百家争鸣”的方针,依靠和团结广大生态学科研工作者,探索生态学奥秘,为生态学基础理论研究搭建交流平台,促进生态学研究发展,为我国培养和造就生态学科研人才和知识创新服务、为国民经济建设和发展服务。

《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。主要刊载文章类型有: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。欢迎广大科技工作者、科研单位、高等院校、图书馆等订阅。

《生态学报》半月刊,大16开本,280页,国内定价90元/册,全年定价2160元。

办公电话:010-62941099, 010-62843362 E-mail: shengtaixuebao@rcees.ac.cn

投稿网址: www.ecologica.cn

本期执行副主编 孔红梅

钟林生 吴钢

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
(SHENTAI XUEBAO)
(半月刊 1981年3月创刊)
第41卷 第3期 (2021年2月)

ACTA ECOLOGICA SINICA
(Semimonthly, Started in 1981)
Vol. 41 No. 3 (February, 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
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 Corporation
Add: P.O.Box 399 Beijing 100044, China

ISSN 1000-0933
9 771000093217



ISSN 1000-0933

CN 11-2031/Q

定价 90.00 元