

全国中文核心期刊  
中国科技论文统计源期刊  
(中国科技核心期刊)

RCCSE中国核心学术期刊  
中国科学引文数据库核心期刊  
(CSCD核心库期刊)

中国精品科技期刊  
广东省优秀科技期刊一等奖

ISSN 1674-5906  
CN 44-1661/X

# 生态环境学报

ECOLOGY AND ENVIRONMENTAL SCIENCES

(原《生态环境》)

2012年5月 第21卷第5期 Vol.21 No.5



只有一个地球,请关心和维护这个小小的行星

Only one earth, please care for and maintain the small planet

《生态环境学报》编辑委员会

<http://www.jeesci.com>

E-mail: editor@jeesci.com

# 生态环 境 学 报

## (原《生态环境》)

第 21 卷 第 5 期 2012 年 5 月 18 日

### 目 次

#### 研究论文

- 温带落叶林的植物物候特征及其对气候变化的响应 ..... 夏富才, 潘春芳, 赵秀海 (793)  
低效低质人工林优化改造后林下植被多样性研究 ..... 魏天兴, 陈致富, 赵健, 郑江坤, 朱文德 (800)  
间伐对马尾松人工林林下植物多样性的短期和长期影响 ..... 李瑞霞, 马洪靖, 闵建刚, 郝俊鹏, 关庆伟 (807)  
渐伐对草类-兴安落叶松林下植被多样性的影响 ..... 王飞, 张秋良, 马秀枝, 王立明 (813)  
昆嵛山盐肤木 *Rhus chinensis* Mill.群落特征及其物种多样性 ..... 侯玉平, 牛凯峰, 朱家华, 赵雪, 王仲礼 (818)  
梅江流域鸟类群落结构及其多样性 ..... 钟福生, 董婉未, 李威娜, 黄勤和 (825)  
桂林岩溶表层带土壤 CO<sub>2</sub> 体积分数时空变化规律及其意义 ..... 吴夏, 朱晓燕, 张美良, 李涛, 白晓 (834)  
长期施肥对土壤有机质积累的影响 ..... 赵广帅, 李发东, 李运生, 张妍, 欧阳竹, 田振荣 (840)  
耕作措施对华北夏玉米田土壤温度和酶活性的影响 ..... 王福军, 张明园, 张海林, 陈阜 (848)  
白洋淀湿地酶活性空间变化规律研究 ..... 王亮, 周怀东, 王世岩, 毛战坡 (853)  
干旱区典型湖泊湿地主要植物生态种组分析 ..... 王合玲, 吕光辉, 张辉国 (858)  
土壤温度和湿度对鲁东南杨树人工林土壤呼吸的协同影响 ..... 董彬 (864)  
化感链霉菌 6803 菌株液体发酵工艺优化的研究 ..... 王瑞龙, 黄珂, 石木标, 宋圆圆, 陈敏, 苏贻娟, 曾任森 (870)
- 近 10 年中国大陆 MODIS 遥感气溶胶光学厚度特征 ..... 罗宇翔, 陈娟, 郑小波, T.L. Zhao (876)  
基于 Landsat TM 影像的武汉市热岛效应研究 ..... 张扬, 江平, 陈奕云, 熊浩宇, 张照男 (884)  
浙江三门湾柱样沉积中长链烯酮、正构烷烃和多环芳烃组成、分布特征及对厄尔尼诺/拉尼娜事件的追踪 ..... 陈荣华, 赵庆英, 王炳泉, 沈远, 王小华, 叶新荣, 卢冰 (890)
- 亚硝酸盐氮胁迫对罗非鱼 (*Oreochromis niloticus*) 血清非特异性免疫酶活性的影响 ..... 陈家长, 藏学磊, 孟顺龙, 瞿建宏, 胡庚东, 宋超, 范立民, 裴丽萍 (897)
- 垃圾渗滤液对斑马鱼的毒性及抗氧化酶活性的影响 ..... 梅丹, 周少奇 (902)
- 太湖水-沉积物界面磷、pH 及碱性磷酸酶的时空特征及相关性 ..... 王福芳, 屈建航, 胡元森 (907)
- 溶藻菌发酵液及其藻类产物的生物急性毒性试验 ..... 孔霞, 朱亮, 徐向阳, 戚韩英, 陆慧锋 (913)
- 垃圾填埋场周边桉树光合生理特性研究 ..... 王艳霞, 李双双, 李华兴 (919)
- 城市高架公路雨水径流的污染特征 ..... 聂发辉, 向建林, 王全金, 王彪 (924)
- 新型调理剂 CTB-2 污泥堆肥的氧气时空变化特征研究 ..... 马闻, 高定, 陈同斌, 郑国砥, 刘洪涛, 周海滨 (929)
- 三维电极电化学反应器组合 Fenton 试剂深度处理焦化废水 ..... 张垒, 王丽娜, 刘璞, 付本全, 张楠, 刘尚超, 吴高明 (933)
- 矿粮复合区土壤-作物系统重金属污染风险性评价 ..... 马守臣, 邵云, 杨金芳, 李春喜 (937)
- 韶关矿产资源开采地区土壤生态系统的微生物生态效应研究 ..... 秦建桥, 汪永红, 李朝晖, 罗育池, 朱社秦 (942)
- 城市道路植物圆柏叶片重金属含量及其与滞尘的关系 ..... 王丹丹, 孙峰, 周春玲, 孙西岭 (947)
- 施用改良剂对岩溶地区矿山污染农田土壤中锌生物有效性的影响 ..... 施春婷, 顾明华, 黄崇玲, 张超兰, 何冰, 梁富妮 (952)
- 乙虫腈及其代谢产物在稻田中的残留消减动态研究 ..... 吴文铸, 郭敏, 石利利, 孔德洋, 单正军, 韩志华 (957)
- 综 述
- 流域生态补偿理论探讨 ..... 赵银军, 魏开漏, 丁爱中, 李爱花 (963)
- 遥感与 GIS 在蝗虫生境研究中的应用进展 ..... 陈健, 王秀君 (970)
- 外来入侵植物在中国的分布及入侵能力研究进展 ..... 黄乔乔, 沈奕德, 李晓霞, 程汉亭, 宋鑫, 范志伟 (977)
- 观 点
- 国外的环境移民问题及启示 ..... 蔡林 (986)

# ECOLOGY AND ENVIRONMENTAL SCIENCES

Vol.21 No.5 May 18, 2012

## Contents

### Research Articles

- Plants phenological response to climate change of temperate deciduous forest ..... XIA Fucui, PAN Chunfang, ZHAO Xuhai (793)  
Understory biodiversity of managed plantation stands from the inefficient and inferior forests ..... WEI Tianxing, CHEN Zhifu, ZHAO Jian, ZHENG Jiangkun, ZHU Wende (800)  
Short-term and Long-term effects of thinning on the undergrowth diversity in the *Pinus massoniana* plantation ..... LI Ruixia, MA Hongjing, MIN Jiangang, HAO Jumpeng, GUAN Qingwei (807)  
Effect of successive cutting on the diversity of understory vegetation in herbage-*Larix gmelini* forest ..... WANG Fei, ZHANG Qiliang, MA Xiuzhi, WANG Liming (813)  
Characters and species biodiversity of *Rhus chinensis* Mill. communities in Kunyu Mountain ..... HOU Yuping, NIU Kaifeng, ZHU Jiahua, ZHAO Xue, WANG Zhongli (818)  
Community structure and diversity of birds in Meijiang River Valley ..... ZHONG Fusheng, DONG Wanwei, LI Weina, HUANG Xunhe (825)  
Variation of soil CO<sub>2</sub> concentration content and its significance in epikarst of Guilin ..... WU Xia, ZHU Xiaoyan, ZHANG Meiliang, LI Tao, BAI Xiao (834)  
Effects of long-term fertilization on soil organic matter accumulation ..... ZHAO Guangshuai, LI Fadong, LI Yunsheng, ZHANG Yan, OUYANG Zhu, TIAN Zhenrong (840)  
Soil temperature dynamics and enzyme activities as influenced by tillage in north China ..... WANG Fujun, ZHANG Mingyuan, ZHANG Hailin, CHEN Fu (848)  
Spatial distribution of soil enzyme activities in wetlands of Baiyangdian ..... WANG Liang, ZHOU huaidong, WANG Shiyuan, MAO Zhanpo (853)  
Ecological species groups analysis of main plants in the typical lake wetland of arid area ..... WANG Heling, LÜ Guanghui, ZHANG Huigu (858)  
Synergistic effects of soil temperature and moisture on soil respiration in *Populus tremula* plantations in southeast Shandong province ..... DONG Bin (864)  
Study on optimization of fermentation of *Sreptomyces sp.* 6803 with allelopathic effects ..... WANG Rui long, HUANG Ke, SHI Mubiao, SONG Yuanyuan, CHEN Min, SU Yijuan, ZENG Rensen (870)
- Climatology of aerosol optical depth over China from recent 10 years of MODIS remote sensing data ..... LUO Yuxiang, CHEN Juan, ZHENG Xiaobo, T. L. Zhao (876)  
Study on heat island effect in Wuhan city based on Landsat TM remote sensing ..... ZHANG Yang, JIANG Ping, CHEN Yiyun, XIONG Haoyu, ZHANG Zhaonan (884)  
The composition and distribution characteristics of the long-chain ketene, n-alkanes and Polycyclic Aromatic Hydrocarbon (PAH) in the sediments of core in the Sanmen Bay of Zhejiang, and the tracking the Niño/La Niña events ..... CHEN Ronghua, ZHAO Qingying, WANG Bingquan, SHEN Yuan, WANG Xiaohua, YE Xinrong, LU Bing (890)  
Effect of nitrite nitrogen stress on the activities of nonspecific immune enzymes in serum of tilapia (*GIFT Oreochromis niloticus*) ..... CHEN Jiazhang, Zang Xuele, MENG Shunlong, QU Jianhong, HU Gengdong, SONG Chao, FAN Limin, QIU Liping (897)  
Toxicity and immune-related enzymes effects on zebrafish exposed to landfill leachate ..... MEI Dan, ZHOU Shaoqi (902)  
Spatio-temporal characteristics and correlation of phosphate, pH and alkaline phosphatase on water-sediment interface of Lake Taihu ..... WANG Fufang, QU Jianhang, HU Yuansen (907)  
Acute toxicity of the fermentation broth of algae-lying bacteria and its products ..... KONG Yun, ZHU Liang, XU Xiangyang, QI Hanbing, LU Huifeng (913)  
Photosynthetic physiological characteristics of *Eucalyptus* around garbage landfill ..... WANG Yanxia, LI Shuangshuang, LI Huaxing (919)  
Characterization of pollutants in urban overhead road ..... NIE Fahui, XIANG Sulim, WANG Quanjun, WANG Biao (924)  
Temporal-spatial distribution of oxygen during sewage sludge CTB-2 amendment composting ..... MA Chuang, GAO Ding, CHEN Tongbin, ZHENG Guodi, LIU Hontao, ZHOU Haibin (929)  
Advanced treatment coking wastewater using three-dimensional electrode reactor combined Fenton reagent ..... ZHANG Lei, WANG Lina, LIU Pu, FU Benquan, ZHANG Nan, LIU Shangchao, WU Gaoming (933)  
Risk assessment of heavy metal contamination in soil-plant system of the overlapped areas of crop and mineral production ..... MA Shouchen, SHAO Yun, YANG Jingfang, LI Chunxi (937)  
Studies on soil microbial ecological effect in the exploitation of mineral resources in Shaoguan Guangdong province ..... QIN Jianqiao, WANG Yonghong, LI Zhaojun, LUO Yuchi, ZHU Zhixi (942)  
Contents of heavy metal and its relationship with dust detainment in leaves of *Sabina chinensis* in urban road ..... WANG Dandan, SUN Feng, ZHOU Chunling, SUN Xiling (947)  
Effect of amendments on Zn bioavailability in polluted soil and Zn accumulation in maize ..... SHI Chunting, GU Minghua, HUANG Chongling, ZHANG Chaolan, HE Bing, LIANG Fun (952)  
Study on residue decline dynamics of ethiprole and its metabolic products in paddy field ..... WU Wenzhu, GUO Min, SHI Lili, KONG Deyang, SHAN Zhengjun, HAN Zhibua (957)

### Reviews

- Discussing of the theory of river basin ecological compensation ..... ZHAO Yinjun, WEI Kaimei, DING Aizhong, LI Aihua (963)  
Progress in application of remote sensing and GIS to the study of locust habitats ..... CHEN Jian, WANG Xiu jun (970)  
Research progress on the distribution and invasiveness of alien invasive plants in China ..... HUANG Qiaociao, SHEN Yide, LI Xiaoxia, CHENG Hanting, SONG Xin, FAN Zhiwei (977)

### Perspectives

- The issues and insights of foreign environmental migration ..... CAI Lin (986)