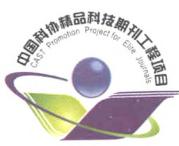


Q K 1 8 4 6 9 9 6



# 应用生态学报

Chinese Journal of Applied Ecology



中国科学院沈阳应用生态研究所  
中国生态学会

主办

 科学出版社出版

万方数据

2018 9  
Vol. 29 No. 9

|   |      |   |
|---|------|---|
| Responses of soil nitrogen transformation to long-term nitrogen fertilization and precipitation changes in a broad-leaved Korean pine forest in Changbai Mountains, China | 2797 | XU Ting-ting, ZHENG Jun-qiang, HAN Shi-jie, et al.    |
| Spatio-temporal variations and influencing factors of thermal comfort at different elevations   | 2808 | ZHANG Xi-yue, JIANG Chao, SUN Jian-xin, et al.        |
| Relationship between vegetation C, N, P stoichiometry and species diversity in sand land  | 2819 | YANG Xiang-xiang, LI Meng-qi, HE Xing-dong, et al.    |
| Stand-level biomass estimation models for the tree layer of main forest types in East Daxing'an Mountains, China  | 2825 | DONG Li-hu, LI Feng-ri                                |
| Hyperspectral prediction model of soil nutrient content in the loess hilly-gully region, China  | 2835 | ZHANG Chao, LIU Yong-mei, SUN Ya-nan, et al.          |
| Predicting models of leaf area for trees in <i>Larix olgensis</i> plantation  | 2843 | XIE Long-fei, DONG Li-hu, LI Feng-ri                  |
| Landscape pattern analysis and optimum design of park green space in Nanchang City, China based on GIS  | 2852 | WEI Xu-ying, CAI Jun-huo, YE Ying-cong, et al.        |
| A multi-scale study on the formation mechanism and main controlling factors of urban thermal field based on urban big data  | 2861 | LUAN Xia-li, WEI Sheng, HAN Shan-rui, et al.          |
| Relationship between land use and nutrients in surface runoff in upper catchment of Miyun Reservoir, China  | 2869 | XU Er-qi, ZHANG Hong-qi                               |
| Impacts of climate and land use change on water and sediment load in the Northwest arid region, China: With Xiaonanchuan River Basin as a case                            | 2879 | WANG Rui, YAO Zhi-jun, LIU Zhao-fei                   |
| Effects of land use change on soil organic carbon and total nitrogen storage in Karst immigration regions of Guangxi Province, China                                      | 2890 | TONG Jin-hui, HU Ye-cui, DU Zhang-liu, et al.         |
| Assessment of ecological vulnerability in multi-scale and its spatial correlation: A case study of Bailongjiang Watershed in Gansu Province, China                        | 2897 | ZHANG Jin-xi, LI Hong-ying, CAO Er-jia, et al.        |
| Spatiotemporal changes of landscape pattern using impervious surface in Guangdong-Hong Kong-Macao Greater Bay Area, China   | 2907 | FENG Shan-shan, FAN Feng-lei                          |
| Effect of film mulching and microbial inoculation on maize growth and water use efficiency under drought stress   | 2915 | QIU Lang, BI Yin-li, ZHANG Yan-xu, et al.             |
| Comprehensive assessment of soil fertility characteristics under different long-term conservation tillages of wheat field in Weihei Highland, China                       | 2925 | WANG Qian, LI Jun, NING Fang, et al.                  |
| Optimizing fertilization scheme of N, P <sub>2</sub> O <sub>5</sub> and K <sub>2</sub> O concentration for eggplant under soilless culture                                | 2935 | MA Sheng, CHEN Zhen, YANG Feng-juan, et al.           |
| Effect of long-term straw mulching and no-tillage on physical properties of meadow soil in cold region  | 2943 | WANG Qiu-ju, ZHANG Jing-tao, GAI Zhi-jia, et al.      |
| Effect of straw belt-mulching on soil temperature and yield of winter wheat in rain-fed semiarid region   | 2949 | CHANG Lei, HAN Fan-xiang, CHAI Yu-wei, et al.         |
| Effects of elevated CO <sub>2</sub> concentration on production and water use efficiency of spring wheat in semi-arid area  | 2959 | ZHANG Kai, WANG Run-yuan, LI Qiao-zhen, et al.        |
| Effects of short-chain polyphosphate fertilization on inorganic P transformation and mobilization of Fe, Mn and Zn in soils   | 2970 | WANG Xue-wei, WANG Chong, CHU Gui-Xin                 |
| Effects of selenium fertilization on selenium availability in rice soil   | 2979 | ZHANG Mu, TANG Shuan-hu, ZHONG Song-zhen, et al.      |
| Effects of glyphosate-resistant transgenic soybean on soil rhizospheric bacteria and rhizobia   | 2988 | SHEN Bin, HONG Xin, CAO Yue-ping, et al.              |
| Screening genotypes and identifying indicators of different <i>Fagopyrum tataricum</i> varieties with low phosphorus tolerance  | 2997 | YANG Chun-ting, ZHANG Yong-qing, MA Xing-xing, et al. |
| Effect of thinning and reshaping on the canopy structure and leaf quality at late growth stage in dense apple orchard in Loess Plateau of eastern Gansu, China            | 3008 | SUN Wen-tai, NIU Jun-qiang, DONG Tie, et al.          |
| Effect of soil salinity on insecticidal protein expression in flower buds of <i>Bt</i> cotton   | 3017 | WANG Yong-hui, CHEN Jian-ping, GAO Jin, et al.        |
| Priority conservation pattern of wetlands in the Yellow River basin based on systematic conservation planning   | 3024 | GUO Yun, LIANG Chen, LI Xiao-wen                      |
| Genetic structure and diversity of <i>Harmonia axyridis</i> populations in Shaanxi Province, China  | 3033 | LI Jing, ZHANG Xiao-fei, XU Ling-ling, et al.         |
| Coupling analysis between new-type urbanization and ecological environment in Fujian Province, China  | 3043 | LIU Chun-yu, LIU Ying-ying, DING Rao-gan              |
| Permissible pollution bearing capacity model of water function zone based on the perspective of municipal wastewater discharge and its application                        | 3051 | QIN Lin, SONG Xiao-yu, CHAO Zhi-long, et al.          |
| Combined effects of fluoxetine and triclosan on <i>Pseudorasbora parva</i>  | 3058 | YAN Liang, MU Lei, CHEN Hong-xing, et al.             |
| Invertebrate assemblage structure associated with key environmental factors in the Yangtze River Estuary, China   | 3067 | REN Qing-qiang, XIAN Wei-wei, ZHANG Yan, et al.       |
| Community structure of zooplankton in adjacent area of Changjiang Estuary, China in summer 2016   | 3078 | JIANG Qiao-li, XU Yong-jiu, YU Cun-gen, et al.        |
| The breadth and overlap of ecological niche of major fish species in the Minjiang River Estuary, China  | 3085 | HE Xiong-bo, LI Jun, SHEN Chen, et al.                |
| Comparison between traditional sequencing and high-throughput sequencing on the dietary analysis of juvenile fish   | 3093 | LIN Xian-zhi, HU Si-min, LIU Sheng, et al.            |
| Antioxidant responses of rainbow trout with different ploidies to acute temperature stress  | 3102 | SHI Kun-peng, DONG Shuang-lin, ZHOU Yan-gen, et al.   |
| Spatial distribution of cladoceran assemblages in surface sediments of shallow lakes in Yunnan  | 3111 | ZHU Qing-sheng, KONG Ling-yang, CHEN Li, et al.       |
| Spatial distributions and environmental control of diatom functional groups in sediments of Haixi Lake, Southwest China   | 3120 | WANG Jiao-yuan, CHEN Guang-jie, KANG Wen-gang, et al. |
| Ecological carrying capacity of shellfish in the Yellow River estuary and its adjacent waters   | 3131 | LIN Qun, WANG Jun, LI Zhong-yi, et al.                |
| <b>Reviews</b>  |      |   |
| Occurrence, degradation and potential ecological risks of triclosan in environment  | 3139 | ZHANG Li-na, GONG Xiao-shuang, AN Jing, et al.        |
| Amino acids in marine particulate matters and sediments and their role as indicators for organic matter degradation   | 3147 | ZHOU Bu, YUAN Hua-mao, SONG Jin-ming, et al.          |

## 目 次

|  |     |     |     |     |          |          |           |           |           |
|--|-----|-----|-----|-----|----------|----------|-----------|-----------|-----------|
| 长白山阔叶红松林土壤氮转化过程对长期施氮和降水变化的响应             | 徐婷婷 | 郑俊强 | 韩士杰 | 张凤丽 | 王秀秀      | (2797)   |           |           |           |
| 气候舒适度在不同海拔的时空变化特征及其影响因素                  | 张曦月 | 姜超  | 孙建新 | 周明飞 | (2808)   |          |           |           |           |
| 沙地植被碳氮磷化学计量特征与物种多样性关系                    |     |     |     |     |          |          |           |           |           |
| 大兴安岭东部主要林分类型乔木层生物量估算模型                   | 杨祥祥 | 李梦琦 | 何兴东 | 王学增 | 尤万学      | 余殿       | 张彩华       | 董利虎       | 陈娜(2819)  |
| 黄土丘陵沟壑区土壤养分含量的高光谱预测模型                    | 张超  | 刘咏梅 | 孙亚楠 | 王雷雷 | 谢龙飞      | 董利虎      | 刘建红(2835) | 李凤日(2843) |           |
| 人工长白落叶松立木叶面积预估模型                         |     |     |     |     |          |          |           |           |           |
| 基于 GIS 的南昌市公园绿地景观格局分析与优化设计               | 魏绪英 | 蔡军火 | 叶英聪 | 周洋  | 刘纯青      | (2852)   |           |           |           |
| 基于城市大数据的热场格局形成机制及主导因素的多尺度研究              | 栾夏丽 | 韦胜  | 韩善锐 | 李小婷 | 杨文宇      | 刘茂松      | 徐驰(2861)  |           |           |
| 密云水库上游流域土地利用与地表径流营养物的关系                  |     |     |     |     |          | 许尔琪      | 张红旗(2869) |           |           |
| 西北干旱区气候和土地利用变化对水沙运移的影响——以小南川流域为例         |     |     |     | 王蕊  | 姚治君      | 刘兆飞      | (2879)    |           |           |
| 广西喀斯特移民迁入区土地利用变化对土壤有机碳和全氮储量的影响           | 仝金辉 | 胡业翠 | 杜章留 | 左玉强 | 李昱颖      | (2890)   |           |           |           |
| 多尺度流域生态脆弱性评价及其空间关联性——以甘肃白龙江流域为例          | 张金茜 | 李红瑛 | 曹二佳 | 冯珊珊 | 巩杰(2897) |          |           |           |           |
| 干旱胁迫下覆膜和接种微生物对玉米生长与水分利用效率的影响             | 裴浪  | 毕银丽 | 张延旭 | 蔡云  | 余海洋      | (2915)   |           |           |           |
| 渭北旱作麦田长期保护性耕作土壤肥力特征综合评价                  | 王倩  | 李军  | 宁芳  | 孙磊  | 温鹏飞      | (2925)   |           |           |           |
| 茄子无土栽培氮磷钾浓度优化施肥方案                        | 马晨  | 陈震  | 杨凤娟 | 王秀峰 | 魏珉       | 史庆华      | 李岩        | 巩彪(2935)  |           |
| 长期免耕秸秆覆盖对寒地草甸土壤物理性质的影响                   | 王秋菊 | 张敬涛 | 盖志佳 | 蔡丽君 | 刘婧琦      | 赵桂范      | 杜佳兴       | 焦峰(2943)  |           |
| 秸秆带状覆盖对半干旱雨养区冬小麦田地温和产量的影响                | 常磊  | 韩凡香 | 柴雨葳 | 杨德龙 | 杨长刚      | 程宏波      | 黄彩霞       | 柴守玺(2949) |           |
| CO <sub>2</sub> 浓度增加对半干旱区春小麦生产和水分利用效率的影响 | 张凯  | 王润元 | 李巧珍 | 王鹤龄 | 赵鸿       | 阳伏林      | 赵福年       | 齐月(2959)  |           |
| 短链聚磷酸磷肥对土壤无机磷转化及铁锰锌有效性的影响                |     |     |     | 王雪薇 | 唐拴虎      | 钟松臻      | 王冲        | 褚贵新(2970) |           |
| 施硒对水稻土壤硒有效性的影响                           | 张木  |     |     |     |          |          | 李苹        | 付弘婷(2979) |           |
| 抗草甘膦转基因大豆对根际土壤细菌及根瘤菌的影响                  |     |     |     |     |          |          |           |           |           |
| 抗草甘膦转基因大豆对根际土壤细菌及根瘤菌的影响                  | 沈彬  | 洪鑫  | 曹越平 | 韩成  | 刘标       | 钟文辉      | (2988)    |           |           |
| 苦荞耐低磷基因型筛选及评价指标的鉴定                       | 杨春婷 | 张永清 | 马星星 | 陈伟  | 董璐       | 张楚       | 路之娟       | (2997)    |           |
| 间伐改形对陇东旱塬密闭苹果园树体冠层结构和发育后期叶片质量的影响         | 孙文泰 | 牛军强 | 董铁  | 刘兴禄 | 尹晓宁      | 马明(3008) |           |           |           |
| 盐胁迫对Bt棉棉蕾杀虫蛋白表达的影响                       | 王永慧 | 陈建平 | 高进  | 张祥云 | 陈梁       | 陈源晨      | 陈德华(3017) |           |           |
| 基于系统保护规划的黄河流域湿地优先保护格局                    |     |     |     | 郭云  |          |          | 李晚文(3024) |           |           |
| 陕西省异色瓢虫种群遗传结构及其多样性                       |     |     |     |     |          |          |           |           |           |
| 福建省新型城镇化与生态环境的耦合分析                       | 李菁  | 张小飞 | 徐玲玲 | 刘津  | 白明皓      | 王振营      | (3033)    |           |           |
| 基于城镇排污视角的水功能区纳污能力模型及其应用                  |     |     |     | 刘春雨 | 刘英英      | 丁饶干      | (3043)    |           |           |
| 氟西汀与三氯生复合暴露对麦穗鱼的毒性效应                     |     |     |     | 覃琳  | 宋孝玉      | 晁智龙      | 冯湘华       | 夏露(3051)  |           |
| 长江口无脊椎动物群聚特征及其与环境因子的关系                   | 闫亮  | 穆磊  | 陈红星 | 郭忠宝 | 罗永巨      | 谢凌天      | (3058)    |           |           |
| 2016年夏季长江口邻近海域浮游动物群落结构                   | 任庆强 | 线薇微 | 张岩  | 刘春龙 | 李文龙      | (3067)   |           |           |           |
| 闽江口主要渔获鱼类的生态位宽度与重叠                       | 蒋巧丽 | 许永久 | 俞存根 | 张浩良 | 肖祎       | 唐逸铮      | 张亚洲(3078) |           |           |
| 传统测序与高通量测序在稚鱼食性分析中的比较                    | 何雄波 | 李军  | 沈忱  | 冯晨  | 郭峻宏      | 招春旭      | 颜云榕       | 康斌(3085)  |           |
| 不同倍性虹鳟幼鱼对急性温度胁迫的抗氧化响应                    |     |     |     | 林先智 | 胡思敏      | 刘晖       | 黄胜        | (3093)    |           |
| 浅水湖泊表层沉积物记录的枝角类群落空间分布特征                  | 史鲲鹏 | 董双林 | 周演根 | 高勤峰 | 孙大江      | (3102)   |           |           |           |
| 基于硅藻功能群特征揭示海西海近现代生态环境变化                  | 朱庆生 | 孔令阳 | 陈丽  | 王晓  | 王教元      | 康文刚      | 李蕊        | 梁红        | 陈光杰(3111) |
| 黄河口邻近水域贝类生态容量                            | 王教元 | 陈光杰 | 康文刚 | 胡葵  | 陈小林      | 吴飞红      | 朱庆生       | 冯钟(3120)  |           |
| 综合评述                                     | 林群  | 王俊  | 季忠义 | 李忠义 | 单秀娟      | 左明       | 刘艳芬       | (3131)    |           |
| 三氯生的环境残留、降解代谢及其潜在生态风险                    |     |     |     | 张立娜 | 官晓双      | 安婧       | 魏树和       | (3139)    |           |
| 海洋颗粒物/沉积物中的氨基酸及其对有机质降解的指示作用              | 周卜  | 袁华茂 | 宋金明 | 李学刚 | 李宁       | 段丽琴      | 任成喆       | (3147)    |           |
| *  | *   | *   | *   |     |          |          |           |           |           |

封面说明

(3016)

本期执行编辑 李凤琴

技术编辑 李凤琴

# 《应用生态学报》第七届编辑委员会

The Seventh Editorial Board of Chinese Journal of Applied Ecology

主 编 Editor-in-Chief 于贵瑞

副 主 编 Associate Editors-in-Chief (按姓氏汉语拼音排序)

安黎哲 韩兴国 何兴元 金昌杰 刘世荣 彭少麟 朱教君 肖 红 (常务)

编 委 Members of Editorial Board (按姓氏汉语拼音排序)

|     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 安树青 | 白 娥 | 蔡志全 | 蔡祖聪 | 陈利顶 | 陈效民 | 程方民 | 代力民 | 戴廷波 |
| 邓建明 | 葛体达 | 龚 骏 | 谷孝鸿 | 管东生 | 郭建平 | 郭良栋 | 韩士杰 | 郝占庆 |
| 郝广友 | 何芳良 | 贺红士 | 何红波 | 贺纪正 | 胡 聰 | 胡远满 | 贾冠清 | 蒋德安 |
| 蒋建东 | 姜 勇 | 开国银 | 孔垂华 | 李凤民 | 李建龙 | 李新正 | 李志安 | 梁 超 |
| 梁文举 | 林文雄 | 刘 勇 | 刘建国 | 刘树华 | 陆宏芳 | 陆宴辉 | 马克明 | 马 男 |
| 倪 健 | 潘 波 | 彭长辉 | 仇荣亮 | 任 海 | 沈仁芳 | 史大林 | 孙永华 | 孙志高 |
| 台培东 | 王政权 | 王志恒 | 魏树和 | 吴东辉 | 邬建国 | 武昕原 | 谢凌天 | 谢永宏 |
| 徐海君 | 徐志宏 | 晏向华 | 杨 健 | 杨永兴 | 杨允菲 | 游 静 | 于红霞 | 余新晓 |
| 宇万太 | 宇振荣 | 曾任森 | 张金林 | 张 锐 | 张旭东 | 张一平 | 赵长明 | 赵文智 |
| 周广胜 | 周启星 | 庄 杰 |     |     |     |     |     |     |

## 应用生态学报

(月刊 1990年3月创刊)

第29卷 第9期 2018年9月

## Chinese Journal of Applied Ecology

(Monthly, Started in March, 1990)

Vol. 29 No. 9 Sep. 2018

编 辑 应用生态学报编辑委员会  
(沈阳市文化路72号 110016)  
电 话: 024-83970393  
传 真: 024-83970394  
网 址: <http://www.cjae.net>

主 编 于 贵 瑞

主 管 中 国 科 学 院

主 办 中国科学院沈阳应用生态研究所

出 版 中 国 生 态 学 学 会

印 刷 沈阳中科印刷有限责任公司

国 内 辽宁省邮政公司报刊发行公司

发 行 (全国各地邮局订阅)

国 外 中国国际图书贸易总公司

发 行 (北京399信箱 100044)

Edited by Editorial Board of Chinese Journal of Applied Ecology  
(72 Wenhua Road, Shenyang 110016, China)  
Tel: 024-83970393  
Fax: 024-83970394  
<http://www.cjae.net>

Editor-in-Chief YU Gui-rui

Superintended by Chinese Academy of Sciences

Sponsored by Institute of Applied Ecology, Chinese Academy of Sciences

Published by Ecological Society of China

Science Press  
(16 Donghuangchenggen North Street, Beijing 100717, China)

Printed by Shenyang Zhongke Printing Co., Ltd.

Distributed by Distribution Center of Newspapers and Journals, Liaoning Post Corporation  
(Subscribed around All Local Post Offices in China) (Domestic)

China International Book Trading Corporation  
(P.O. Box 399, Beijing 100044, China) (International)

ISSN 1001-9332 国内邮发代号: 8-98

CN 21-1253/Q 国外发行代号: M5661

国内外发行 定价: 65.00 元

ISSN 1001-9332



9 771001 933185