

# 山东大学

## 二〇一七年招收攻读硕士学位研究生入学考试试题

科目代码 630 科目名称 生态学

(答案必须写在答卷纸上, 写在试题上无效)

### 一、名词解释 (每小题 3 分, 共 30 分, 用中文解释即可)

1. Ecological hotspot 生物多样性热点
2. Environment carrying capacity 环境容纳量
3. Niche 生态位
4. Genetic drift 遗传漂变
5. Interference competition 干扰性竞争
6. Key species 关键种
7. Landscape 景观
8. Synusia 层片
9. Vegetation 植被
10. Wetland 湿地

### 二、翻译下列内容 (共 1 题, 20 分)

#### Long-term decline of the Amazon carbon sink

Atmospheric carbon dioxide records indicate that the land surface has acted as a strong global carbon sink over recent decades, with a substantial fraction of this sink probably located in the tropics, particularly in the Amazon. Nevertheless, it is unclear how the terrestrial carbon sink will evolve as climate and atmospheric composition continue to change. Here we analyse the historical evolution of the biomass dynamics of the Amazon rainforest over three decades using a distributed network of 321 plots.

While this analysis confirms that Amazon forests have acted as a long-term net biomass sink, we find a long-term decreasing trend of carbon accumulation. Rates of net increase in above-ground biomass declined by one-third during the past decade compared to the 1990s. This is a consequence of growth rate increases levelling off recently, while biomass mortality persistently increased throughout, leading to a shortening of carbon residence times. Potential drivers for the mortality increase include greater climate variability, and feedbacks of faster growth on mortality, resulting in shortened tree longevity. The observed decline of the Amazon sink diverges markedly from the recent increase in terrestrial carbon uptake at the global scale, and is contrary to expectations based on models.

### 三、简答题 (每题 10 分, 共 50 分)

1. 比较在无限环境中世代不相重叠的两类种群的增长模型, 简要说明其生物学意义。
2. 简述层片的特征, 并举例说明层片与层的本质区别。
3. 群落演替过程中群落的物种多样性如何变化?
4. 何谓群落交错区和边缘效应, 它们在理论和实践上有什么意义?
5. 在常见的三种金字塔中, 生物量金字塔和数量金字塔在某些生态系统中可以呈现倒金字塔型, 但能量金字塔却无论如何不会呈现倒金字塔型。试解释其中的原因。

### 四、论述题 (每题 25 分, 共 50 分)

1. 光作为重要的生态因子有哪些特点? 对动物和植物各有什么生态作用?
2. 试述生态位的概念、生态位理论的基本要点、群落学意义及其应用。