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白洋淀湿地芦苇生物量及氮、磷储量动态特征

Dynamics of biomass, nitrogen and phosphorus storage of *Phragmites australis* in Baiyangdian Lake

关键词: [白洋淀](#) [芦苇](#) [生物量](#) [氮](#) [磷含量](#) [氮](#) [磷储量](#)

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摘要: 作为由水陆相互作用形成的独特生境,湿地生态系统在氮、磷等营养元素的生物地球化学循环中发挥着重要的作用.本文在实地调查和实验室测定的基础上,研究了白洋淀湿地芦苇(*Phragmites australis* (Cav.) Trin. Ex Steudel)各构件的生物量和氮、磷含量.在此基础上估算了氮、磷储量并系统分析了各指标在生长季节的动态变化.结果表明,各构件生物量随时间的推移而逐渐增加,叶片生物量的最大值出现在6月,根状茎生物量的最大值则出现在8月,叶鞘、地上茎和地上部分生物量的最大值出现在10月;地上各部分氮、磷含量的最大值均出现在4月的生长初期,其后随时间的推移而逐渐降低,最小值出现的时间各不相同,根状茎氮、磷含量的最大值分别出现在8月和4月;各部分氮、磷储量与生物量间存在显著的相关性,地上部分氮、磷储量的最大值均出现在6月,分别为 $(18.91 \pm 2.12) \text{ g} \cdot \text{m}^{-2}$ 和 $(1.17 \pm 0.13) \text{ g} \cdot \text{m}^{-2}$.

Abstract. As the special habitat formed by the interaction between terra and water area, wetlands play important roles in biogeochemical cycling process of nitrogen and phosphorus. To understand the growth dynamics and characteristics of *Phragmites australis* (Cav.) Trin. Ex Steudel in Baiyangdian Lake, a typical wetland ecosystem, field investigation and laboratory measurements were conducted to identify its biomass, nitrogen and phosphorus content and storage. Results showed that with the growth of *P. australis*, biomass of leaf and root increased firstly and reached the maximum value in June and August respectively, then decreased. In comparison, biomass of stem, sheath and shoot increased during the whole growth season, and reached the maximum value in October. It also showed that nitrogen and phosphorus content of each aboveground component was the highest at April, during the early period of growth. Nitrogen and phosphorus content of root reached the maximum value in August and April respectively, and the time that nitrogen and phosphorus content of each component reached the minimum value was different. There were significant relationships between nitrogen and phosphorus storage, and biomass with the maximum nitrogen and phosphorus storage of shoot were $(18.91 \pm 2.12) \text{ g} \cdot \text{m}^{-2}$ and $(1.17 \pm 0.13) \text{ g} \cdot \text{m}^{-2}$, respectively, occurring both in June.

Key words: [Baiyangdian Lake](#) [Phragmites australis](#) [biomass](#) [nitrogen and phosphorus content](#) [nitrogen and phosphorus storage](#)

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