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**華東師範大學**

## 博士后研究工作报告

题目: 上海崇明生态岛景观格局  
与陆生脊椎动物的关系

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# 上海崇明生态岛景观格局与陆生脊椎动物的关系

## **The Relationship Between Landscape Pattern and Terrestrial Vertebrates in Chongming Eco Island, Shanghai**

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## 内 容 摘 要

城市化正在全球范围内迅速发展,城市景观格局特征越来越复杂,受格局影响的生态过程、功能也不断发生变化,对生物多样性产生深刻影响,目前人类还未能了解这种影响所造成的真正后果。调查的缺乏是掌握城市化进程对生物多样性影响的最大瓶颈之一。人类活动、生境丧失和退化以及过度利用是导致脊椎动物物种濒危灭绝的主要原因,物种的保护必然要同时考虑它们所生存的生态系统和景观的多样性和完整性。

崇明岛是重要的野生动物栖息地,对整个上海市具有重要的生态服务功能。崇明生态岛建设过程中之首是自然资源的保护利用,但长期以来对于崇明岛野生动物资源整体调查的资料不多。在此背景下,本研究在了解崇明三岛野生动物资源的历史的基础上,设定了崇明生态岛野生动物资源调查,明晰了崇明三岛野生动物资源和栖息地状况,并且分析了景观格局与陆生动物的关系。

本研究的野外调查自2013年6月至2015年8月进行,每季节进行一次调查。调查结果显示,累计记录到两栖类5种1812只,分属1目3科,密度为37.75只/公顷;累计记录到爬行类5种31只,分属1目2科,累计记录到鸟类144种37307只,分属14目45科,密度为3839.433只/平方公里;累计记录到兽类2种23只,分属2目2科。从不同类型野生动物所占比例来看,无论从种类和数量上来说,崇明生态岛三岛区域最主要的野生动物类群为鸟类。

按照鸟类的具体类别区分,则最主要的鸟类类群为雀形类和鸽鹑类。数量最多的前十种鸟分别是麻雀、白头鹎、骨顶鸡、家燕、白鹭、珠颈斑鸠、牛背鹭、八哥、棕背伯劳、喜鹊,占全部鸟类总数的70.89%。而对于其他动物类群,最主要的是两栖类中的蛙类,其中中华大蟾蜍、泽蛙、黑斑蛙是最主要的两栖类动物。爬行类和兽类在调查中记录的种类和数量均很少,不是崇明三岛陆生野生动物的主体。

对不同季节而言,秋季记录的两栖类少于夏季。爬行类在夏季和秋季的出现几率类似。而鸟类则基本表现为,种类呈现从春季到秋冬季逐渐增加的规律,数量则为夏季和冬季多,秋季和春季少的规律。兽类则在秋季记录的数量略多。

在所进行调查的4种栖息地大类型中,对于两栖类而言,无论是夏季调查还

是秋季调查，湿地所记录的两栖类的数量均远多于其他几种栖息地类型。对于爬行类而言，建筑均是最容易发现爬行类的栖息地类型。在不同栖息地类型中，湿地所记录的鸟类种类和数量均为最多，林绿地次之，之后是农田，最后是建筑。在鸟类物种多样性指数上，湿地最高；在群落均匀性指数上，林绿地最高。在具体的栖息地类型中，属于湿地栖息地大类型的滨海禾草沼泽记录的鸟类种类和数量均为最多。鸟类主要出现的前五类栖息地类型分别为旱田、滨海禾草沼泽、沟渠、针阔叶混交林和荒地。植被覆盖度高、植物种类众多、人为干扰相对较少的林绿地栖息地中，鸟类的物种多样性指数和均匀性指数最高。而林绿地栖息地类型是最容易发现兽类的样区。

对此，建议将受到人为干扰相对较小的滨海禾草沼泽为主的湿地类型栖息地和针阔叶混交林为主的林绿地栖息地类型是需要重点保护的栖息地类型，并构建合适的生态廊道，开展长期监测，减少景观格局破碎化对崇明生态岛生物多样性的影响。

**关键词：**

野生动物调查，陆生脊椎动物，景观格局，栖息地  
鸟类，两栖类，爬行类，兽类，崇明生态岛，上海

## **Abstract**

Urbanization is rapidly developing throughout the world. The characteristic of urban landscape pattern is becoming more and more complicated. Influenced by pattern, the ecological process and function are also changing, which has profound impact on biodiversity. However, human beings have not yet fully understood the real consequence of such impact. The lack of investigation is one of the biggest bottleneck of the understanding of urbanization impact on biodiversity. Human activity, habitat loss, degradation and overuse are the major reasons that led to vertebrate species becoming endangered. Species protection must consider both their living ecosystem and their landscape diversity and integrity.

Chongming Island is an important wildlife habitat, playing an important role in providing ecological service function to the city of Shanghai. The construction of Chongming ecological island should base on protection and utilization of its natural resources. However, there are not many integrated investigation on its wildlife resources. Therefore, with the fully understand of its historic situation, the study designed and conducted a series of investigations on Chongming island's wildlife resources, understood the wildlife and habitat situation, and analyzed the relationship between landscape pattern and terrestrial vertebrates.

In this study, the field survey was conducted from June 2013 to August 2015, a survey was conducted in each season. The results show that total 5 species of 1812 individuals of amphibians have been recorded, belonging to 3 families and 1 order. And the density of amphibians are 37.75 per ha. 5 species of 31 individuals of reptiles have been recorded, belonging to 2 families and 1 order. 144 species of 37307 individuals of birds have been recorded, belonging to 45 families and 14 orders. And the density of birds is 3839.433 per square kilometers. 2 species of 23 individuals of mammals have been recorded, belonging to 2 families and 2 orders. It means that birds are the main wildlife groups in the area of the three islands of Chongming Eco-Island, whether in the species number or the individual number.

According to specific categories of birds, the most important groups of birds are Passeriformes and Charadriiformes. The largest number of the top ten species of birds are Eurasian Tree Sparrow (*Passer montanus*), Chinese Bulbul (*Pycnonotus sinensis*), Eurasian Coots (*Fulica atra*), barn swallow (*Hirundo rustica*), Little Egret (*Egretta garzetta*), Spotted Dove (*Spilopelia chinensis*), Eastern Cattle Egret (*Bubulcus coromandus*), Crested Myna (*Acridotheres cristatellus*), Long-tailed Shrike (*Lanius schach*), Common Magpie (*Pica pica*). They account for 70.89% of the total number of birds.

And for other animal groups, frogs of amphibians are most important. The Toad (*Bufo bufo*), Black-spotted Pond Frog (*Pelophylax nigromaculatus*) are the main amphibian animals. Both the species number and the individual number of reptiles and mammals recorded in the survey were very small. They are not the main wildlife groups in Chongming Eco-Island.

To different seasons, amphibians recorded in autumn are less than that in summer. Reptiles show similar occurrences both in summer and autumn. The species of birds increased gradually from spring to autumn and winter. There are more birds in summer and winter, and less in autumn and spring. Mammals recorded show the biggest quantity in autumn.

Among the four major habitat types being investigated, there are always more amphibians in wetland than in other habitats no matter in summer or autumn. Constructions are always the easiest habitat to find reptiles. Among different habitats, there are most bird species and quantity recorded in wetland. Then it is urban forest and green space, farmland, and construction at last. The Shannon-Wiener index of wetland is the highest. The Pielou index of woodland is the highest. In particular habitat type, there are most bird species and quantities recorded in coastal grass marsh belong to the wetland. Dry farmland, coastal grass marshes, ditches, coniferous broad-leaved mixed forest and wasteland are the top 5 important habitats for birds. The Shannon-Wiener index and Pielou index in the Woodland habitats with high vegetation coverage, numerous plant species and few human disturbances are higher than other habitat. And mammals are easier to find in the urban forest and green

space.

We propose that the wetland and urban forest and green space with fewer human disturbance listed as key conservation of the habitat types, especially the coastal grass marsh and the coniferous broad-leaved mixed forest. And to build a suitable ecological corridors, to carry out long-term monitoring. Meanwhile, in order to reduce the landscape pattern fragmentation on biodiversity in Chongming Eco-Island, we propose to build a suitable ecological corridor and to carry out long-term monitoring.

**Keywords:**

Wildlife Survey, Terrestrial Vertebrates, Landscape Pattern, Habitat, Birds, Amphibians, Reptiles, Mammals, Chongming Eco-Island, Shanghai



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