A Study on Flocking behavior and Sexual Dimorphism in Taiwanese Birds

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### Topic 1: Flocking behavior

#### Introduction

Research indicates that bird flocking behavior differs between urban and natural habitats, primarily due to variations in predation risk and food resources. Urban environments generally exhibit lower predation risk, leading to smaller and less compact flocks compared to rural counterparts (Carere et al., 2009). In high-risk areas, birds form larger, more compact flocks and increase vigilance behaviors (Barbosa, 1997).

Urban habitats often provide reliable food sources, resulting in more consistent foraging patterns and social networks among urban birds (Jones et al., 2019).

Starling flocking behavior differs between urban roosts with high and low predation risk, with larger and more compact flocks in the high-risk roost.

Aerial flocking patterns of wintering starlings, Sturnus vulgaris, under different predation risk

Starling flocking behavior differs between urban roosts with high and low predation risk, with larger and more compact flocks in the high-risk roost.

捕食風險高和低的城市棲息地之間的椋鳥群體行為有所不同，高風險棲息地的鳥群更大、更緊湊。

Foraging Behavior of Urban Birds: Are Human Commensals Less Sensitive to Predation Risk than their Nonurban Counterparts  
Urban birds like House Sparrows are less sensitive to predation risk than their nonurban counterparts when foraging.

#### Method

#### Result

### Topic 2: Sexual Dimorphism

#### Introduction

Research on plumage dimorphism in birds reveals complex relationships with activity patterns and environmental factors. Studies have shown that different forms of dimorphism are associated with various aspects of avian behavior and ecology. Plumage-color dimorphism is linked to extra-pair paternity rates (Owens & Hartley, 1998). Nest predation may constrain female plumage brightness more than male plumage, particularly in species where only females incubate (Martin & Badyaev, 1996). Social mating systems strongly influence multiple forms of dimorphism, with polygynous and lekking species showing greater dimorphism than monogamous ones (Dunn et al., 2001).

Color polymorphism in birds, occurring in 3.5% of species, is most prevalent in certain orders and may be maintained by disruptive selection related to detectability under variable light conditions (Galeotti et al., 2003). Activity patterns significantly influence eye morphology in birds, with nocturnal species having larger corneal diameters relative to axial lengths for enhanced visual sensitivity, while diurnal birds have larger axial lengths for improved visual acuity (Hall & Ross, 2007).

However, the relationship between avian activity time and plumage dimorphism has yet to be thoroughly investigated. Therefore, this study aims to examine whether there is a significant association between the activity time of birds and their plumage dimorphism.

#### Method

#### Result

### Discussion

### Conclusion

### Reference

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