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EXPLORING THE EVERLASTING ATTRACTION FOR BIRDS

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ABSTRACT

From Neanderthals to users of citizen science platforms, birds always held a special place in human societies. Birds are the most attractive animal group in many human cultures, possessing a unique set of morphological and non-morphological traits. One of the most fascinating non-morphological features of birds is active flight, a character that is often overlooked by researchers. Therefore, we compared the only three animal groups possessing active flight (i.e., birds, bats, and insects), using Kellert's nine core attitudes towards animals, and birds always conveyed more positive feelings. The special attraction of humans towards birds is probably responsible for the ratification of the first international conventions dedicated to the legal protection of this specific animal taxon.

Key Words: active flight, animals, human-animal relations, public perception.

INTRODUCTION

In recent years there has been a growing interest concerning the human perception of birds among other animal groups (e.g., Lišková & Frynta, 2013; Andrade et al., 2022; Santangeli et al., 2024). Indeed, humans' fascination with birds has attracted the attention not only of psychologists (Lišková et al., 2015) and ethnologists (Thomas, 2010) but also of researchers interested in biodiversity conservation (Mittermeier et al., 2023; Santangeli et al., 2024) and in the international wildlife trade (Senior et al., 2022; Ferrari et al., 2023). However, most studies focused primarily on the overall aesthetic perception of birds, and specifically on their body shape, coloration, ornamentation, and melodious vocalizations (e.g., Lišková et al., 2015; Ferrari et al., 2023; Santangeli et al., 2024). These outstanding features evolved through natural or sexual selection to better communicate with conspecifics, competitors, and predators (Anderson, 1994), while being at the same time highly appreciated by humans, that are diurnal visual animals (Kaas and Balaram, 2014). However, birds possess many other special attributes that are not merely visual and that, nonetheless, appear highly attractive or evocative to human individuals and societies. For example, birds are well known for possessing complex courtship rituals and prolonged parental cares, and most of them (over 90% of species) are monogamous (e.g., Lack, 1968). Moreover, migratory populations of birds travel over long distances from their winter-feeding grounds to their reproductive areas (Newton, 2024), and in many countries they are considered harbingers of the incoming good season of renewal and vegetation growth. Among these non-morphological bird features, the ability to fly by means of different techniques, of which flapping (i.e., the vigorous beating of wings up and down induced by muscular labor), is probably the most impressive (Ruaux et al., 2020; Newton, 2024). In this framework, we draw

attention to the many diverse attributes that make these flying organisms unique in the entire animal kingdom from a human standpoint. Historically, birds always appeared of special symbolic interest to the eyes of *Homo* populations, starting from Neanderthals that used eagle talons as personal ornaments about 130.000 years ago (Radovčić et al., 2015) up to the current users of online wildlife platforms that interact with their images at a higher rate than any other animal or plant group (i.e., Chandler et al., 2017; Havinga et al., 2023). Indeed, the ability of “flying as a bird” has always intrigued human populations and societies (Biewener, 2022). Many ancient and modern mythological narratives describe flying as an attribute of divine or super-human entities (e.g., flying gods, flying dragons, flying objects, superheroes), and the action of flying is part of many extra-sensorial events such as dreaming and out-of-body psychic or spiritual experiences (e.g., Schredl, 2011).

Insects, birds, and bats constitute the sole active flying animal groups (Ruaux et al., 2020), whereas some other animals such as flying fishes, flying squirrels and ballooning spiders are merely gliders. Therefore, we compared human attitudes toward these three flying animal groups to better understand why birds largely evoke positive feelings and seem in general more attractive in comparison to other living organisms (Lišková and Frynta, 2013).

METHODS

To compare insects, bats, and birds, we used Kellert’s (1993) nine human attitudes toward animals. This framework provides valuable insights into the complexities of human relationships toward animals and their implications for wildlife conservation and animal welfare. We used this specific set of attitudes because they were explicitly formulated for animals (Kellert, 1993), while the successive versions were expanded and partially modified to be more broadly applied to natural systems (i.e., Van Wieren & Kellert, 2013) or to socio-ecological systems (i.e., Ross et al., 2018).

Our comparison was based on the nine core categories defined by Kellert’s (1993), in which we identified a total of 19 subcategories (see Table 1 in Results). To provide a quantitative evaluation of our comparison we also assigned a numerical score ranging from 3 to 1, from the most to the least positive attitude. In the case of negative attitudes (i.e., fear or avoidance) the scores were assigned from 1 to 3 from the least to the most. Moreover, we assigned tied scores when we assessed that two or all three groups conveyed similar attitudes toward humans. Thus, the sum of each subcategory always summed to 6 and had the same weight in the final total score. Therefore, this final score synthesizes the general human attitude towards our three focal animal groups.

RESULTS

The comparison based on human attitudes toward the three flying animal groups, clearly shows that birds evoke much more positive feelings than both bats and insects (Figure 1).

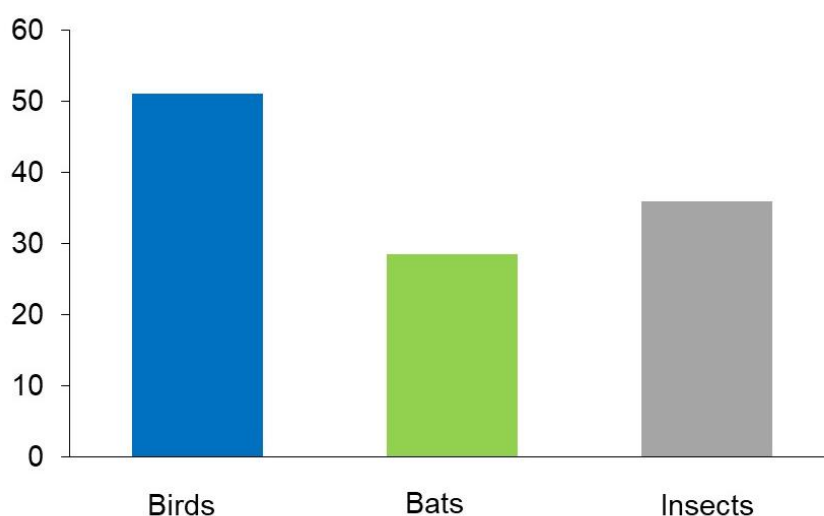


Figure 1. Total attitude scores for the three flying animal groups.

The difference is striking, and birds almost always scored the most positive attitude value (Table 1). This because, the presence of birds is easily perceived and appreciated by humans in different habitat types, even in urban ecosystems that are highly modified and artificial habitats (e.g., White, 2023). Moreover, birds are relatively large, and often very conspicuous to humans because of their flying movements, coloration, or vocalizations (Table 1). Even in environments with poor visibility such as coppice woods and tropical forests with dense overstory, songbirds always reveal their presence. Conversely, negative attitudes toward birds are relatively infrequent, and the irrational fear of birds (i.e., ornithophobia) has been acknowledged amongst the less popular biophobias occurring across the world wide web (Correia & Mammola, 2023).

DISCUSSION AND CONCLUSIONS

Our analyses of human attitudes towards the only three extant flying animal groups clearly revealed that birds were evoking more positive feelings and emotions in comparison to both insects and bats. Aesthetic features of birds are undoubtedly among the most appreciated across the entire animal kingdom and their symbolic perception is highly valued (Lišková & Frynta, 2013; Scalfi et al., 2023). Moreover, many species use their vocal organ, the syrinx, to communicate with conspecifics or competitors. Thus, birdsongs are highly appreciated by the human ear and have inspired several traditional or classical musical compositions. For instance, birdsongs are imitated instrumentally or vocally in the “Spring” by Antonio Vivaldi, in “Le Merle Noir” by Olivier Messiaen and in “Le Chant des Oiseaux” by Clément Janequin. In other compositions such as “Cantus Arcticus” by Einojuhani Rautavaara, and “Slow Motion Blackbird” by Chris Hughes original recordings of birdsongs are incorporated within the composition and are played together with musical instruments.

Table 1. Comparing birds, bats, and insects using kore attitudes towards animals (Kellert, 1993). Scores were assigned for the most (3) to the least (1) positive attitude. In the case of a negative attitude (fear or avoidance) scores were assigned from the least (1) to the most (3). If attitudes were similar, ties were assigned, therefore, the final sum is always 6.

Attitude	Birds	Bats	Insects
Naturalistic (interest and affection for wildlife and the outdoors)			
Searched by private collectors/enthusiasts	Birdwatching is widespread worldwide (score 3)	Not searched by private collectors/enthusiast (score 1)	Many private “bugs” or butterfly collectors capture, exchange or buy specimens (score 2)
Ecologicistic (concern for the environment)			
Inducing concern for wild populations and their habitats	First animal group to be protected at the international level (1905); in EU first animal group to be protected by means of the protection of habitats (Birds Directive, 1979) (score 3)	Only recently protected at the international level (migratory species); in EU species and their habitats protected since 1992 (Habitats Directive) (score 1.5)	Only recently protected at the international level; in EU species and their habitats protected since 1992 (Habitats Directive) (score 1.5)
Humanistic (affection for individual animals as pets)			
Inducing affection/bonding	Many species maintained as house pets (score 3)	Never maintained as house pets (score 1)	Few species maintained as house pets (score 2)
Inducing inspiration/admiration	Many species show complex mating behaviours; all species possess parental cares (score 3)	Mating behaviour relatively simple (and unobservable); all species possess parental cares (score 1.5)	Mating behaviour ranges from relatively simple to very complex, but it is almost always unobservable (with the exception of bees); few species possess parental cares (score 1.5)

Attitude	Birds	Bats	Insects
Moralistic (concerns on animal welfare)			
Concerning for individual welfare	There are no international laws on welfare of birds. In EU the welfare of all non-human vertebrates is protected during transport by Council Regulation (EC) 1/2005 and in scientific experimentation by Directive 2010/63/EU (score 3)	There are no international laws on welfare of bats. In EU the welfare of all non-human vertebrates is protected during transport by Council Regulation (EC) 1/2005 and in scientific experimentation by Directive 2010/63/EU (score 2)	There are no international laws on welfare of insects. There are no EU laws on insect use in scientific experimentation (score 1)
Scientistic (interest in physical attributes and biological functioning)			
Challenging scientific research or curiosity	Highly attractive from a scientific point of view (i.e., evolution, behaviour, migrations, population trends) (score 2)	Highly attractive from a scientific point of view (i.e., evolution, ultrasound emission, underground populations, population trends) (score 2)	Highly attractive from a scientific point of view (i.e., evolution, behaviour, pollination, metamorphosis, population trends) (score 2)
Aesthetic (attractiveness and symbolic appeal)			
By size (max): tiny $0.1 < 2$ cm; small $2 \leq 20$ cm; large $20 < \infty$ cm)	From small to large (score 2.5)	From small to large (score 2.5)	From tiny to small (1)
Appreciated for colourfulness	Although not universal, showing bright colourations is a feature of many species (score 2.5)	All species possess dull colouration (score 1)	Many species are colourful (e.g., butterflies, coleopterans), but a significant percentage possess mimetic and dull colourations (score 2.5)
By activity	Most species are active during the day (score 2.5)	All species are active during the night (score 1)	Most species are active during the day (score 2.5)

Attitude	Birds	Bats	Insects
By ubiquity	Species are found in all continents and habitats (score 2)	Species are found in all continents and habitats, except marine ones (score 2)	Species are found in all continents and almost all habitats (rare in marine ones) (score 2)
By observability/detectability	Most species are easily detected, recognised, and studied. In impenetrable habitats, such as dense forests, their presence is detected because of their songs or calls (score 3)	All species only detectable during the night (score 1)	Generally difficult to be detected, apart from butterflies and dragonflies which fly during the day and are coloured; the presence of some species (crickets, grasshoppers and cicadas) is detected because of their calls; others can be indirectly detected by signs of presence such as galls (score 2)
By vocality/musicality	All species use their syrinx to communicate vocally. Their melodic songs are highly appreciated by humans and inspired many traditional and classical musical compositions. Some species repeat words or entire human sentences (score 3)	Bats ultrasounds are not perceived by humans (score 1)	Most species are soundless, but some species emit characteristic sounds (cicadas, crickets) (score 2)
By symbolism	In temperate regions, migrant birds are harbingers of Spring (i.e., the renovation and growing season) (score 2.5)	Bats are sometimes perceived as negative symbols associating their image to that of vampires (score 1)	In temperate regions, the massive appearance of insects is associated with Spring (i.e., the renovation and growing season) (score 2.5)
Utilitarian (interest in practical value of animals)			
Consumable as food	Many species have tasty flesh and provide protein-rich trophic resources to human populations (score 3)	There are very few species that are used as food by humans (score 1)	There are very few species that are used as food by humans (even if many species are bred to produce animal feed (score 2)

Attitude	Birds	Bats	Insects
Ornamental use	From prehistory to modern times, stuffed birds, feathers, and claws have been used by humans as fashion ornaments and/or status symbols (score 3)	Never used as ornaments (score 1)	Rarely used as live ornaments. Silkworms are bred to produce silk (score 2)
Dominionistic (interest in control of animals)			
Domesticated (farmed or bred)	Several species have been domesticated for food or ornament (chickens, turkeys, ostriches) (score 3)	Never domesticated (score 1)	Few species have been domesticated for food (honeybees) (score 2)
Hunted for sport (pride or status symbol)	In modern times, some humans still hunt birds for sport, and not for subsistence (score 3)	Never hunted for sport (score 1.5)	Never hunted for sport (score 1.5)
Negativistic (avoidance for indifference, dislike, or fear)			
For fear (direct attack)	Harmful attacks by birds to humans are infrequent and rarely mortal (e.g., ostriches, cassowaries). However, they can represent a serious indirect danger in the case of bird strike (score 2)	Harmful attacks by bats to humans are extremely rare and never mortal (score 3)	Attacks from fleas, gadflies, fire ants, bees, wasps, and hornets may cause severe health problems and sometimes death (score 1)
For repulsion	Birds are sometimes avoided (ornithophobia) (score 2)	Bats are sometimes avoided (chiropterophobia) (score 2)	Insects are sometimes avoided (insectophobia) (score 2)

Many birds are also attractive for their tasty flesh and their feathers that in the past were used as fancy decorations or status symbol ornaments (Schrubb, 2013). Finally, many species are often hunted just for sport or entertainment with the implication that a successful hunt will convey signals underlying hunter's qualities to rivals, allies or potential mates (Darimont et al., 2017). In addition stuffed birds can be displayed as game trophy signaling again the status symbol of the hunter (e.g., Humphreys, 2010; Schrubb, 2013).

By contrast, when the human attitudes toward bats were evaluated the differences with those of birds were obvious (see Table 1). These relatively large animals are nocturnal, dull colored, and secretive, thus they are relatively difficult to be detected and observed by humans and usually overlooked by the public. Moreover, bats emit ultrasounds that are not perceived by the human auditory system. Therefore, although bats possess parental cares as birds do, and complex migratory and social behaviors they rarely evoke emblematic analogies and positive emotional feelings.

Concerning insects, these animals are tiny or small in size, and usually difficult to be detected from distance, unless they are colorful butterflies or dragonflies. In general, insects are rarely perceived as charismatic or symbolic animals (with probably the exception of butterflies and honeybees). Conversely, they are sometimes even perceived as dangerous or repulsive in modern societies, possibly because of the reduced opportunity to experience positive interaction and especially in urban environments, this attitude being formalized by the urbanization-disgust hypothesis of Fukano & Soga (2021).

In conclusion, the positive attitude of humans towards birds stems from a deep-seated admiration for their perceived beauty, symbolism, ecological and economic importance. This enduring relationship probably reflects our innate connection to the natural world and our shared responsibility to protect and preserve biodiversity for future generations. As a result, birds were historically the specific object of the first world-wide convention on the protection of a specific wildlife group. In fact, the international "Convention for the Protection of Birds useful to Agriculture" (originally in French "*Convention pour la protection des oiseaux utiles à l'agriculture*") was officially signed in Paris in 1902 and become effective in 1905. This convention, ratified by a dozen of European States, was restricted to a narrow list of species considered "useful" in agriculture. This approach was based on the outdated concept of "useful" and "harmful" animals. However, the Paris convention of 1905 provided the first legal international framework for all the successive more advanced and inclusive legislations on the conservation of wildlife and biodiversity, that were conceived and proposed by international agencies acting under the United Nations umbrella (e.g., <https://www.cbd.int/>).

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