Journal of Raptor Research

Advancing the science, conservation, and understanding of birds of prey

Journal of Raptor Research 58(2):137–140
doi: 10.3356/jrr24503

Caracaras: Exploring the Natural History and Conservation of an Understudied Raptor Group

Joan L. Morrison[1*] and James F. Dwyer[2]

[1]*Corrales, NM 87048 USA*
[2]*EDM International, Inc., Fort Collins, CO 80525 USA*

KEY WORDS: *caracara*; Daptrius; Ibycter; Milvago; Phalcoboenus; *scavenger*.

Raptors are often the focus of conservation efforts because of their global exposure to a variety of threats many of which are linked to anthropogenic activities. These include acute threats like persecution, electrocution, and collisions with vehicles and other human structures (Hager 2009, Péron et al. 2017, Madden et al. 2019, Slater et al. 2020), chronic threats like exposure to lead and rodenticide (Garvin et al. 2020, Gomez et al. 2022), and existential threats like habitat loss and climate change (Panopio et al. 2021, Martínez-Ruiz et al. 2023).

Caracaras are an understudied group of Neotropical raptors in the family Falconidae comprising nine extant species (Winkler et al. 2020). All are endemic to the New World, and all but one occur only in Central and South America, with one species extending north through Mexico to the southern United States. The geographic distribution and even much of the natural history are not well known for most caracaras, yet many are affected by factors likely to lead to population declines, particularly as agriculture and urban development expand throughout these regions. Along with the above-mentioned threats, caracaras may also incur negative perceptions associated with scavengers because of their scavenging habits and frequent associations with vultures, possibly limiting interest in the group.

Knowledge of the caracaras varies widely across species. Some are broadly distributed and in some regions are expanding into urban areas, where they may encounter many anthropogenic threats. Other caracaras are elusive and scarcely distributed, and occupy remote habitats that are difficult to access, so their exposure to threats is unknown. The two forest-dwelling caracaras, the Black Caracara (*Daptrius ater*) and the Red-throated Caracara (*Ibycter americanus*), are essentially unstudied as are the three species in the genus *Phalcoboenus* that inhabit high elevation habitats in the Andes. In contrast, the Crested Caracara (*Caracara plancus*) is represented in numerous studies from throughout its large geographic range, including the USA (Florida [e.g., Morrison 1999, Smith et al. 2017, Dwyer et al. 2018] and Texas [Atkinson et al. 2007]), Mexico (Rodríguez-Estrella and Rivera-Rodríguez 1992), Brazil (Sazima 2007), and Argentina (Saggese et al. 2022). The behavioral ecology of the Chimango Caracara (*Milvago chimango*), perhaps the most common raptor in southern south America, has been well studied in Argentina (e.g., Biondi et al. 2013, Guido et al. 2017); other aspects of this species' natural history are little known.

The conservation status of most extant caracaras is least concern; only the Striated Caracara (*Phalcoboenus australis*) is listed as near threatened (International Union for the Conservation of Nature [IUCN] 2024), yet this likely is due more to lack of knowledge of their life histories and population trajectories throughout their respective ranges than to actual insulation from threats. Developing appropriate conservation and management strategies for caracaras requires reliable information on each species' ecology, habitat requirements, distribution, and demography. In the absence of sufficient research to understand the needs of and threats to each caracara species in each part of its range, there

* Corresponding author: Joan.Morrison@trincoll.edu

is the risk that species may slip from least concern to higher threat levels.

Recognizing the need for expanded understanding of the life history and threats to all caracaras, the Raptor Research Foundation hosted a caracara symposium during its 2022 annual meeting in Fort Lauderdale, Florida, USA. The symposium gathered researchers from North, Central, and South America and provided a venue for researchers to share information on the behavior, breeding biology, genomics, nesting habitat, and threats faced by caracaras. That symposium led to this special issue of the *Journal of Raptor Research* focused on caracaras. This issue begins with an article in which the authors compiled and summarized the existing literature on caracaras to help identify knowledge gaps and provide recommendations for future research (Morrison and Saggese 2024). The subsequent 20 articles then describe original research on most of the caracaras, with topics ranging from predation behavior (Formoso et al. 2024) to movements (Morrison and Poli 2024), nest site selection (Rivas-Fuenzalida et al. 2024), and disease (Michels et al. 2024, Paterlini et al. 2024). Many papers describe specific threats, some offer conservation strategies. Unfortunately, this special issue includes no new research on the Black Caracara, the Carunculated Caracara (*Phalcoboenus carunculatus*), and the Yellow-headed Caracara (*Milvago chimachima*), demonstrating the ongoing paucity of knowledge of these species.

Citizen science is increasingly making important contributions to applied ecological research and conservation planning (Pocock et al. 2017). Large citizen science datasets can add insights into natural history and aid in identifying anthropogenic risks for raptors (Demeter et al. 2018, Hanmer et al. 2021). Multiple papers in this issue follow that trend by using citizen science data to investigate topics including diet of two of the least known caracaras (Pantoja-Maggi et al. 2024), the spatial distribution and overlap of two allopatric species (Balza et al. 2024), and range expansion of the Crested Caracara in the southern USA (Smith and Dwyer 2024). Grande et al. (2024b) used citizen science data to model a species' distribution in Chile and Argentina. We are pleased to see the expansion of citizen science to support caracara conservation and management and look forward to seeing additional research leverage novel and creative mechanisms of collecting and using citizen science data.

There are no Corvidae (crows, ravens, jays, and allies) in South America. Caracaras are curious and intelligent, likely filling many of the corvid niches in the southern hemisphere (Harrington et al. 2024). Articles in this issue describe aspects of behavior and social ecology of the Chimango Caracara in South America (Gallego-García et al. 2024, Solaro 2024) and exploration of anthropogenic objects by the Striated Caracara on Islas Malvinas/Falkland Islands (Harrington and Lambert 2024). We encourage further research into the cognitive capabilities of all caracaras, as understanding their intelligence and behavioral plasticity is crucial to understanding their ecology and conservation needs (Dwyer et al 2018, Biondi et al. 2022).

The caracaras' generalist and opportunistic nature is highlighted in several articles describing caracara adaptations to and threats encountered in anthropogenic landscapes, including use of human-made structures as nest sites in urban areas (Galmes et al. 2024, Liébana et al. 2024a, 2024b, Martínez-Miranzo et al. 2024), consumption of novel prey (Honig et al. 2024, Quispe et al. 2024), and causes of mortality (Grande et al. 2024a, Orozco-Valor et al. 2024). Findings from these studies highlight the need for future research on caracaras to include a focus on human–caracara interactions.

The articles included here begin to address some of the knowledge gaps and research needs limiting conservation and management of caracaras, yet much remains a mystery, particularly for species with limited distributions, in areas that face challenges to both financial and political support for conservation, and in areas with limited access for researchers. More work is needed, and we hope that readers of this issue will discover a new appreciation for, and perhaps a new interest in studying, caracaras. We hope this expanded interest will lead to additional understanding and focus on conservation of these unique raptors.

In organizing and editing this special issue, we found caracara researchers throughout the Americas to be incredibly welcoming and inclusive. We hope these papers will also introduce you to caracara researchers you may not have known and that new connections will lead to expanded collaborations among caracara researchers both within and across countries. Further, we hope this work will lead to collaborations among researchers studying other avian scavengers, many of which are subject to the same threats as the caracaras.

ACKNOWLEDGMENTS

We wish to express our sincere gratitude to K. J. Harrington and M. D. Saggese for their thoughtful contributions to the initial proposal for the caracara symposium and particularly to M. D. Saggese for helping to organize and oversee the symposium at the annual meeting and for first proposing that this special issue follow the symposium. We especially thank the *Journal of Raptor Research*'s Editor-in-

Chief, C. R. Dykstra, for supporting this special issue, the first focused on caracaras. We also thank the authors of the papers presented in the symposium and published here, and the institutions that supported them, for their dedication to expanding the scientific understanding of the natural history and conservation needs of this unique and understudied group of raptors. Finally, we recognize and express our gratitude to the reviewers, translators, and editors for their dedicated and professional work to bring this issue to fruition.

LITERATURE CITED

Balza, U., N. A. Lois, and V. Ojeda (2024). Mapping the Mountain Caracara (*Phalcoboenus megalopterus*)/White-throated Caracara (*P. albogularis*) contact zone and possible hybrid zone in Northern Patagonia. Journal of Raptor Research 58:269–272. doi:10.3356/JRR-23-36.

Biondi, L. M., G. Fuentes, and M. Susana (2022). Behavioural factors underlying innovative problem-solving differences in an avian predator from two contrasting habitats. Animal Cognition 25:529–543.

Biondi, L. M., J. Guido, E. Madrid, M. S. Bó, and A. I. Vassallo (2013). The effect of age and sex on object exploration and manipulative behavior in a Neotropical raptor, the Chimango Caracara, *Milvago chimango*. Ethology 119:221–232.

Demeter, I., M. Horváth, K. Nagy, Z. Görögh, P. Tóth, J. Bagyura, S. Solt, A. Kovács, J. F. Dwyer, and R. E. Harness (2018). Documenting and reducing avian electrocutions in Hungary: A conservation contribution from citizen scientists. Wilson Journal of Ornithology 130:600–614.

Dwyer, J. F., J. D. Fraser, and J. L. Morrison (2018). Evolution of communal roosting: A social refuge – territory prospecting hypothesis. Journal of Raptor Research 52:407–419.

Formoso, A. E., R. L. D'Agostino, M. L. Agüero, and E. A. Agu (2024). Predation by Crested Caracaras (*Caracara plancus*) on nests of the endemic White-headed Steamer-Ducks (*Tachyeres leucocephalus*). Journal of Raptor Research 58:235–240. doi:10.3356/JRR-23-28.

Gallego-García, D., M. Larrea, C. Solaro, and J. H. Sarasola (2024). Biparental care in a generalist raptor, The Chimango Caracara in central Argentina. Journal of Raptor Research 58:176–184. doi:10.3356/JRR-23-16.

Galmes, M. A., C. Solaro, and C. Buss (2024). Chimango Caracaras (*Milvago chimango*) nesting in natural and anthropogenic cavities in Argentina. Journal of Raptor Research 58:245–248. doi:10.3356/JRR-23-33.

Garvin, J. C., V. A. Slabe, and S. F. Cuadros Díaz (2020). Conservation Letter: Lead poisoning of raptors. Journal of Raptor Research 54:473–470. doi:10.3356/0892-1016-54.4.473.

Gomez, E. A., S. Hindmarch, and J. A. Smith (2022). Conservation Letter: Raptors and anticoagulant rodenticides. Journal of Raptor Research 56:147–153. doi:10.3356/JRR-20-122.

Grande, J. M., M. A. Galmes, M. A. Santillán, C. Solaro, M. S. Liébana, I. M. Luque-Romero, A. P. Mansilla, M. M. Reyes, and M. Cervio (2024a). Water reservoirs and power lines as mortality sources for Crested Caracaras. Journal of Raptor Research 58:257–263. doi:10.3356/JRR-23-29.

Grande, J. M., T. Rivas-Fuenzalida, J. Díaz-Tavie, C. Asún, S. Castrilli, E. Z. Mena, D. Romo-Cancino, M. Pendaries, L. Fasola, G. Gabarain, S. Imberti, et al. (2024b). Distribution, nesting records, and notes on the ecology of the White-throated Caracara (*Phalcoboenus albogularis*). Journal of Raptor Research 58:193–206. doi:10.3356/JRR-23-53.

Guido, J. M., L. M. Biondi, A. I. Vassallo, and R. N. Muzio (2017). Neophobia is negatively related to reversal learning ability in females of a generalist bird of prey, the Chimango Caracara, *Milvago chimango*. Animal Cognition 20:591–602.

Hager, S. B. (2009). Human-related threats to urban raptors. Journal of Raptor Research 43:210–226. doi:10.3356/JRR-08-63.1.

Hanmer, H. J., C. Boothby, M. P. Toms, D. G. Noble, and D. E. Balmer (2021). Large-scale citizen science survey of a common nocturnal raptor: Urbanization and weather conditions influence the occupancy and detectability of the Tawny Owl *Strix aluco*. Bird Study 68:233–244.

Harrington, K. J., R. Folkertsma, A. M. Auersperg, L. M. Biondi, and M. L. Lambert (2024). Innovative problem solving by wild falcons. Current Biology 34:190–195. doi:10.1016/j.cub.2023.10.061.

Harrington, K. J., and M. L. Lambert (2024). Object play in wild Striated Caracaras (Falconidae). Journal of Raptor Research 58:212–220. doi:10.3356/JRR-23-19.

Honig, M. D., R. A. Honig, and B. C. Bowers (2024). Turtles as prey of Crested Caracaras (*Caracara plancus*) on the Katy Prairie, Texas. Journal of Raptor Research 58:264–265. doi:10.3356/JRR-22-110.

International Union for the Conservation of Nature (IUCN) (2024). The IUCN Red List of Threatened Species. Version 2023-1. https://www.iucnredlist.org/.

Liébana, M. S., M. Á. Santillán, C. Solaro, and J. R. Gracia (2024a). Chimango Caracaras (*Milvago chimango*) nesting on natural and human-made substrates in urban centers in Argentina. Journal of Raptor Research 58:241–244. doi:10.3356/JRR-23-43.

Liébana, M. S., M. Á. Santillán, J. Mallet, I. L. Romero, and J. M. Grande (2024b). Unusual nesting behavior of Crested Caracaras in central Argentina. Journal of Raptor Research 58:254–256. doi:10.3356/JRR-23-00035.

Madden, K. K., G. C. Rozhon, and J. F. Dwyer (2019). Conservation letter: Raptor persecution. Journal of Raptor Research 53:230–233. doi:10.3356/JRR-18-37.

Martínez-Miranzo, B., A. Lekuona, B. García-Urdangarin, D. Gallego, and J. H. Sarasola (2024). Anthropogenic material in Crested Caracara (*Caracara plancus*) nests causes voltage drops in electrical transmission lines in Argentina. Journal of Raptor Research 58:249–253. doi:10.3356/JRR-23-00037.

Martínez-Ruiz, M., C. R. Dykstra, T. L. Booms, and M. T. Henderson (2023). Conservation Letter: Effects of global climate change on raptors. Journal of Raptor Research 57:92–105. doi:10.3356/JRR-22-75.

Michels, T. J., G. Evans, T. Kelly, N. Gonzalez, M. Bozas, and C. van der Heiden (2024). First detection of highly

pathogenic avian influenza virus in a Crested Caracara. Journal of Raptor Research 58:266–268. doi:10.3356/JRR-23-00014.

Morrison, J. L. (1999). Breeding biology and productivity of Florida's Crested Caracaras. The Condor 101:505–517.

Morrison, J. L., and C. L. Poli (2024). Post-fledging movements and factors that influence permanent departure of juvenile Crested Caracaras in Florida. Journal of Raptor Research 58:161–175. doi:10.3356/JRR-23-48.

Morrison, J. L., and M. D. Saggese (2024). Assessing knowledge of the caracaras: Compiling information, identifying knowledge gaps, and recommendations for future research. Journal of Raptor Research 58:141–152. doi:10.3356/JRR-23-39.

Orozco-Valor, P. M., J. I. Zanón-Martínez, and J. H. Sarasola (2024). Temporal and age-dependent patterns of road-killed raptors in Argentina. Journal of Raptor Research 58:229–234. doi:10.3356/JRR-23-31.

Panopio, J. K., M. Pajaro, J. M. Grande, M. D. Torre, M. Raquino, and P. Watts (2021). Conservation Letter: Deforestation. The Philippine Eagle as a case study in developing local management partnerships with indigenous peoples. Journal of Raptor Research 55:460–467. doi:10.3356/JRR-20-118.

Pantoja-Maggi, V., F. Medrano, and P. Martínez (2024). Using citizen science data to investigate the diet of the Mountain Caracara (*Phalcoboenus megalopterus*) and White-throated Caracara (*Phalcoboenus albogularis*) using citizen science data. Journal of Raptor Research 58:207–211. doi:10.3356/JRR-23-32.

Paterlini, C. A., M. S. Bó, M. D. Saggese, E. A. Bonetti, R. P. Noseda, C. Bigalli, and L. M. Biondi (2024). Prevalence of pathogens in free-living adult Chimango Caracaras (*Milvago chimango*) in three areas with different levels of urbanization in the pampas ecoregion, Argentina. Journal of Raptor Research 58:185–192. doi:10.3356/JRR-23-61.

Péron, G., C. H. Fleming, O. Duriez, J. Fluhr, C. Itty, S. Lambertucci, K. Safi, E. L. C. Shepard, and J. M. Calabrese (2017). The energy landscape predicts flight height and wind turbine collision hazard in three species of large soaring raptor. Journal of Applied Ecology 54:1895–1906.

Pocock, M. J. O., J. C. Tweddle, J. Savage, L. D. Robinson, and H. E. Roy (2017). The diversity and evolution of ecological and environmental citizen science. PLoS ONE 12(4):e0172579. doi:10.1371/journal.pone.0172579.

Quispe, J., A. Diaz, and A. Almonte (2024). Predation by a Mountain Caracara on a Titicaca water frog in Peru. Journal of Raptor Research 58:273–275. doi:10.3356/JRR-23-64.

Rivas-Fuenzalida, T., K. Burgos-Andrade, and F. Angulo (2024). First nest records of the Red-throated Caracara (*Ibycter americanus*) in Peru. Journal of Raptor Research 58:276–279. doi:10.3356/JRR-23-41.

Sazima, I. (2007). The jack-of-all-trades raptor: Versatile foraging and wide trophic role of the Southern Caracara (*Caracara plancus*) in Brazil, with comments on feeding habits of the Caracarini. Revista Brasileira de Ornitologia 15:592–597.

Slater, S. J., J. F. Dwyer, and M. Murgatroyd (2020). Conservation letter: Raptors and overhead electrical systems. Journal of Raptor Research 54:198–203. doi:10.3356/0892-1016-54.2.198.

Smith, J. A., and J. F. Dwyer (2024). Assessing range shifts and expansions of Crested Caracaras over 30 years in Arizona, Texas, and Florida, USA. Journal of Raptor Research 58:153–160. doi:10.3356/JRR-23-27.

Smith, J. L., J. L. Morrison, and J. D. Fraser (2017). A habitat model to aid the conservation of Crested Caracaras. Journal of Wildlife Management 81:712–719. doi:10.1002/jwmg.21239.

Solaro, C. (2024). Vocal repertoire of Chimango Caracaras in rural and urban habitats. Journal of Raptor Research 58:221–228. doi:10.3356/JRR-23-25.

Winkler, D. W., S. M. Billerman, and I. J. Lovette (2020). Falcons and caracaras (Falconidae), version 1.0. In Birds of the World (S. M. Billerman, B. K. Keeney, P. G. Rodewald, and T. S. Schulenberg, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. doi:10.2173/bow.falcon1.01.