Use of appeasement display and recruitment by an adult Striated Caracara (Phalcoboenus australis) to overcome territorial defense

Article *in* The Wilson Journal of Ornithology · October 2021

DOI: 10.1676/20-00060

CITATION
1

READS
155

2 authors, including:

Katie J. Harrington
University of Veterinary Medicine, Vienna
13 PUBLICATIONS **77** CITATIONS

SEE PROFILE

Use of appeasement display and recruitment by an adult Striated Caracara (Phalcoboenus australis) to overcome territorial defense

Authors: Harrington, Katie J., and Meiburg, Jonathan

Source: The Wilson Journal of Ornithology, 133(1) : 127-131

Published By: The Wilson Ornithological Society

URL: https://doi.org/10.1676/20-00060

The Wilson Journal of Ornithology 133(1):127–131, 2021 DOI: 10.1676/20-00060

Use of appeasement display and recruitment by an adult Striated Caracara (*Phalcoboenus australis*) to overcome territorial defense

Katie J. Harrington[1]* and Jonathan Meiburg[2]

ABSTRACT—Adult animals across many taxa use appeasement signaling to minimize or avoid costly conflict in social settings by jointly communicating their consent to defer and an interest to remain. When foraging, however, appeasement may not be enough to gain access to a resource controlled by a dominant conspecific. In this case, conspecific recruitment can shift the social dynamic, so the resource becomes accessible to all. Striated Caracara (*Phalcoboenus australis*) are Near Threatened scavenging falconids that breed in high densities on the extreme southern coasts of South America and the Falkland Islands. While juvenile caracaras recruit other caracaras to concentrated food resources, neither recruitment nor appeasement has been reported in adults. Here we describe a female adult caracara that appeared to use both appeasement signaling and recruitment to access food in another pair's defended territory on New Island, Falkland Islands. Appeasement and recruitment calls are one of several behavioral parallels that researchers have noted among Striated Caracara, Common Raven (*Corvus corax*), and Kea (*Nestor notabilis*). Although falconids are not typically considered in comparative studies of avian cognition and social behavior, we suggest that caracaras merit further attention, especially given their relationship to parrots in the clade Eufalconimorphae. *Received 11 May 2020. Accepted 9 June 2021.*

Key words: Eufalconimorphae, Falconidae, foraging, scramble competition, territory, vocal repertoire.

[1] Acopian Center for Conservation Learning, Hawk Mountain Sanctuary, Orwigsburg, PA, USA
[2] Dripping Springs, TX, USA
* Corresponding author: katiejharrington@gmail.com

Uso de un despliegue de apaciguamiento y reclutamiento de un adulto del caracara *Phalcoboenus australis* para sobreponerse a defensa territorial

RESUMEN (Spanish)—Los adultos de muchos taxa usan señales de apaciguamiento para minimizar o evitar el costoso conflicto en situaciones sociales, comunicando su consentimiento para ceder y un

interés de permanecer. Sin embargo, cuando están forrajeando, la señal de apaciguamiento podría no ser suficiente para tener acceso a un recurso controlado por un conespecífico dominante. En este caso, el reclutamiento podría modificar la dinámica social para que el recurso esté disponible para todos. Los caracaras *Phalcoboenus australis* son falcónidos carroñeros Casi Amenazados que anidan a altas densidades en las costas extremas del sur de Sudamérica y las Islas Malvinas. Si bien los caracaras juveniles reclutan a otros caracaras hacia recursos alimenticios concentrados, dicho reclutamiento y apaciguamiento no se han reportado en adultos. Aquí describimos una hembra adulta de caracara que parece usar ambos, señales de apaciguamiento y reclutamiento, para acceder a alimento en un territorio bajo defensa de otra pareja en Isla Goicoechea, Islas Malvinas. Los llamados para apaciguar y reclutar son uno de varios paralelos conductuales que los investigadores han notado entre este caracara, el cuervo (*Corvus corax*) y el kea (*Nestor notabilis*). Aunque los falcónidos no son típicamente considerados en estudios comparativos de capacidad cognitiva y comportamiento social aviar, sugrimos que estos caracaras merecen mayor atención, especialmente dada su relación con los loros en el clado Eufalconimorphae.

Palabras clave: competencia trepadora, Eufalconimorphae, Falconidae, forrajeo, repertorio vocal, territorio.

Adult animals across many taxa use appeasement signaling to minimize or avoid costly conflict in social settings by jointly communicating their consent to defer and an interest to remain (Signe and Van Schaik 2000). For example, rhesus macaque (*Macaca mulatta*) navigate socially dominant conspecifics by silently baring their teeth, and meerkat (*Suricata suricatta*) grovel at the feet of dominant females (Kutsukake and Clutton-Brock 2006). These social tactics also have been documented in birds, as when juvenile Kea (*Nestor notabilis*) hunch in the presence of dominant adult males to avoid displacement at a feeding event (Diamond and Bond 1991), or when Common Guillemot (*Uria aalge*) use a ritualized walking behavior to appease neighbors while moving through high-density colonies (Birkhead 1978).

When foraging, however, appeasement may not be enough to gain access to a resource controlled by a dominant conspecific. In this case, conspecific recruitment is sometimes used to shift the social dynamic from contest to scramble competition, in which the resource becomes accessible to all (Nicholson 1954, Parker 2000). For example, juvenile Common Raven (*Corvus corax*) attempting to scavenge at carcasses produce recruitment calls that attract conspecifics who overwhelm territorial adult pairs (Heinrich 1988).

Striated Caracara (*Phalcoboenus australis*; hereafter "caracaras") are Near Threatened scavenging falconids that breed in high densities on the extreme southern coasts of South America and the Falkland Islands (Balza et al. 2017, Reeves et al. 2018, BirdLife International 2020). During the austral summer, they forage in colonies of breeding seabirds; in winter, when most seabirds migrate offshore, caracaras consume invertebrates, penguin and seal excreta, and bonanzas of carrion (e.g., carcasses of Gentoo Penguin [*Pygoscelis papua*], cast sheep [*Ovis aries*], and pinnipeds; Strange 1996, Rexer-Huber and Bildstein 2013). While juvenile caracaras recruit other caracaras to concentrated food resources (Strange 1996, Autilio et al. 2019), this behavior has not been reported in adults. Here we describe an adult caracara that appeared to use both appeasement signaling and recruitment to access food in another pair's defended territory.

New Island (51°43′12″S, 61°18′0″W) is a 22 km^2 formerly farmed nature preserve in the Falkland Islands. Since becoming a preserve in 1972, its breeding population of caracaras has rebounded from 0 to over 80 pairs, reaching a density of 4.3 nests/km^2. Caracara age classes are easily defined by plumage and bill color (Strange 1996), and much of the coastline is occupied by territorial adult pairs (Catry et al. 2008). Two wardens who live at a central settlement are the island's only human inhabitants. GPS data indicate an adult pair of banded caracaras (M30 female and M31 male, hereafter the "M pair") includes the settlement in their territory (KJH, 2019, unpubl. data), which they defend against intruders and in which they have nested and fledged young (G. Hazell, New Island Warden, 2020, pers. comm.).

On 9 August 2019 (austral winter), during a trapping effort (see Harrington et al. 2018 for methods) in the M pair's territory, we observed an adult female intrude and use appeasement displays and recruitment calls to access food. Prior to opening the trap, we had surveyed an 800 m radius around the settlement. The only birds present were the M pair and the neighboring pair, H37 and H38 (hereafter, the "H pair"), who hold an adjacent territory (KJH, 2019, unpubl. data).

At 0940 h (GMT-3), we opened the trap. After 2 min, M30 approached, fed, and then defended the bait against 2 circling Turkey Vultures (*Cathartes aura*). At 0950 h, we trapped and released M30,

Figure 1. Adult female R31 calling and displaying in the appeasement posture: head bowed, back hunched, wings held away from the body. New Island, Falkland Islands, 9 August 2019. Photo by K. Harrington.

Figure 2. Adult female G6 (left) performing appeasement posture in the presence of territorial adult pair (right) at Gentoo Penguin colony. New Island, Falkland Islands, 4 August 2019. Photo by K. Harrington.

who remained close to the trap. Meanwhile, 2 unbanded caracaras, a juvenile and an adult, landed within 20 m of the trap. The H pair visibly remained 150 m from the trap and performed a territorial "duetting" display with heads thrown back while calling simultaneously (Strange 1996). At 1001 h, we trapped and banded the juvenile female as R30. We next trapped and banded the adult female as R31, while the M pair duetted 40 m away. Both R30 and R31 were trapped within 1 min of approaching the bait, and neither was able to feed before ensnaring their tarsus.

When we released R31 at the trap, she immediately postured with her back hunched, body feathers ruffled, head bowed, and wings spread downward (Fig. 1), and began uttering a soft, high-pitched, intermittent vocalization, a behavior commonly seen in fledgling Striated Caracara and Northern Crested Caracara (*Caracara cheriway*) when begging for food from their parents (KJH, pers. obs.; J. Morrison, Trinity College, 2020, pers. comm.). The M pair approached and supplanted R31, who flew to a perch within 15 m of the trap.

M30 approached R31 again and made brief agonistic contact. R31 flew off with one talon dangling slightly, then returned to within 2 m of the trap and resumed the "begging" call and posture for over 2 min, while the M pair remained at 40 m distance, duetting.

We stood atop the trap to prevent R31 from being recaptured. R31 walked around the trap begging and posturing, then flew to a perch within 5 m of the trap and switched to a loud, repeating cry we recognized as a "recruitment" call (Strange 1996, Autilio et al. 2019). Within 60 s, 9 additional unbanded adult caracaras arrived, along with one unbanded subadult and R30. We moved to stand 5 m from the trap. The newly arrived birds swarmed the trap and consumed the bait. The M pair joined in, and we observed no agonistic interactions between birds as they fed. At 1040 h we closed and removed the trap. By 1052 h, M30 and M31 had chased away all birds except R30 and R31.

Striated Caracara throughout the Falkland Islands show little fear of humans (Strange 1996), and the presence of observers at or near the trap during trapping efforts does not appear to deter them (Harrington et al. 2018). We acknowledge that the trap is an artificial situation, but their behavior at traps appears similar to their behavior at naturally occurring carcasses of injured Upland Geese (*Chloephaga picta*) and cast sheep. Furthermore, we observed another instance of adult begging on New Island 5 d prior, in which a banded adult female (G6) attempting to forage in a Gentoo Penguin colony assumed the same posture as R31 and was tolerated by an adult pair who had previously been defending against intruders (Fig. 2).

R31's glossy-black plumage, white terminal tail band, pale striations on head and neck, yellow legs, and silver bill indicated that she was an adult of breeding age. Her sex was later confirmed via DNA analysis (following the methods in Morrison 1999). Many adult female birds perform begging displays for several reasons, although they do so primarily during the breeding season to signal

nutritional need (Ellis et al. 2009). As this occurred outside the breeding season, we suggest that R31's most likely motivation was "appeasement" in which she signaled to avoid conflict (Lorenz 1935, Heinrich et al. 1993, Ellis et al. 2009). Juvenile Common Raven, when attacked by dominant adults, perform a similar submissive display and begging call, with head bowed, feathers fluffed, and wings spread (Heinrich 1988, 1989).

We speculate that R31, like a juvenile raven, was acknowledging her subordinate status and signaling to the M pair that she was not an immediate threat so she could be permitted to feed. While she may have been a floater frequenting this territory (*sensu* Smith et al. 1978), it is also possible that she was seasonally territorial; although New Island appeared to support a similar number of adult birds as in the previous summer, an island-wide survey revealed fewer pairs maintaining territories through the winter (KJH, unpubl. data). It is also possible that R31 was a previous offspring of the M pair, and thus perhaps more likely to show begging behavior toward her parents, since Striated Caracara are long-lived birds (at least 12 years old in the wild [KJH, 2020, unpubl. data] and 32 in captivity [A. Wallace, Falconry and Me, 2020, pers. comm.]) and our survey data suggests site fidelity among females (KJH, 2019, unpubl. data). Ravens show long-term memory of group members and can distinguish affiliates from nonaffiliates (Boeckle and Bugnyar 2012), although further research is needed to understand these capabilities in Striated Caracara.

We also surmise that R31's subsequent recruitment behavior may have been a response to our guarding the trap. Her recruitment call, functionally similar to that of juvenile Common Raven recruitment calls to a carcass (Heinrich 1989), and the swift response of conspecifics, suggests caracaras are aurally observant and primed to take advantage of sudden feeding opportunities signaled by this call. We also note that the neighboring territorial H pair, though visible, did not respond to R31's recruitment call. This may be evidence of the "dear enemy effect" (Fisher 1954), a phenomenon in which territorial neighbors respect territorial boundaries, which would suggest that the newly arrived birds were not holding territories adjacent to the M pair. Prior to these observations, we had observed juvenile Striated Caracara recruiting at food sources, but we had never seen adults use both appeasement and recruitment to overcome a territorial pair.

We also note the similarity of R31's behavior, not only to ravens, but to the "hunch" display used by juvenile Kea to appease dominant conspecifics (Diamond and Bond 1991), one of several behavioral parallels that researchers have noted between these 2 species (Rexer-Huber and Bildstein 2013, Autilio et al. 2019). Despite their close relationship to parrots in the recently defined clade Eufalconimorphae (Suh et al. 2011), falconid birds are not typically considered in comparative studies of avian group dynamics, social intelligence, and cognitive evolution (i.e., Emery and Clayton 2004, Gutiérrez-Ibáñez et al. 2018). We suggest that caracaras, whose lineage is basal to the widespread "true" falcons of the genus *Falco*, merit further attention. Recent studies of social learning and behavior in Chimango Caracara (*Phalcoboenus chimango*; Biondi et al. 2010, Solaro and Sarasola 2019) and group dynamics in Northern Crested Caracara and Striated Caracara (Dwyer and Cockwell 2011, Dwyer 2014, Dwyer et al. 2018) suggest that caracaras could show similar social behavior and cognitive abilities to parrots and crows, including social learning and object play (Diamond and Bond 2003, Miller et al. 2014). Striated Caracara's high density, sociality, approachability, and behavioral flexibility (*sensu* Mayr 1974) make them ideal candidates for further study, and we suggest that research into their social landscape and cognitive skills could shed light on the ancestral cognitive abilities of their clade.

Acknowledgments

Funding for this study was provided by Falklands Conservation, the Falkland Islands Government Environmental Studies Budget, the John Cheek Trust, and Hawk Mountain Sanctuary. We thank the Falkland Islands Government Environmental Planning Department for providing permission to work on the islands and the New Island wardens, Alec and Giselle Hazell, for being gracious hosts and providing logistical support during our stay. We thank K. Bildstein for initiating Hawk Mountain Sanctuary's longitudinal study of Striated Caracara in the Falklands. We also thank J. Morrison, J. Dwyer, A. Bond, and 2 anonymous reviewers for providing critical comments that improved an earlier version of this manuscript. All research was conducted in accordance with the Falkland Island Government Conservation of Wildlife and Nature Ordinance under Research License No. R22/2015. This is Hawk Mountain Contribution to Conservation Science No. 349.

Literature cited

Autilio AR, Bechard MJ, Bildstein KL. 2019. Social scavenging by wintering Striated Caracaras (*Phalcoboenus australis*) in the Falkland Islands. Behavioral Ecology and Sociobiology. 73:27.

Balza U, Lois NA, Raya Rey A. 2017. Status and reproductive outcome of the breeding population of Striated Caracaras (*Phalcoboenus australis*) at Franklin Bay, Staten Island, Argentina. Wilson Journal of Ornithology. 29:890–898.

Biondi LM, Bó MS, Vassallo AI. 2010. Inter-individual and age differences in exploration, neophobia and problem-solving ability in a Neotropical raptor (*Milvago chimango*). Animal Cognition. 13:701–710.

BirdLife International. 2020. Species factsheet: *Phalcoboenus australis* [cited 28 Apr 2020]. http://www.birdlife.org

Birkhead TR. 1978. Behavioural adaptations to high density nesting in the Common Guillemot *Uria aalge*. Animal Behaviour. 26:321–331.

Boeckle M, Bugnyar T. 2012. Long-term memory for affiliates in ravens. Current Biology. 22:801–806.

Catry P, Lecoq M, Strange IJ. 2008. Population growth and density, diet and breeding success of Striated Caracaras *Phalcoboenus australis* on New Island, Falkland Islands. Polar Biology. 31:1167–1174.

Diamond J, Bond AB. 1991. Social behavior and the ontogeny of foraging in the Kea (*Nestor notabilis*). Ethology. 88:128–144.

Diamond J, Bond AB. 2003. A comparative analysis of social play in birds. Behaviour. 140:1091–1115.

Dwyer JF. 2014. Correlation of cere color with intra- and interspecific agonistic interactions of Crested Caracaras. Journal of Raptor Research. 48:240–247.

Dwyer JF, Cockwell SG. 2011. Social hierarchy of scavenging raptors on the Falkland Islands, Malvinas. Journal of Raptor Research. 45:229–235.

Dwyer JF, Fraser JD, Morrison JL. 2018. Evolution of communal roosting: A social refuge–territory prospecting hypothesis. Journal of Raptor Research. 52:407–419.

Ellis JM, Langen TA, Berg EC. 2009. Signalling for food and sex? Begging by reproductive female White-throated Magpie-Jays. Animal Behaviour. 78:615–623.

Emery NJ, Clayton NS. 2004. Comparing the complex cognition of birds and primates. In: Rogers LJ, Kaplan G, editors. Comparative vertebrate cognition: Are primates superior to non-primates? New York (NY): Springer; p. 3–55.

Fisher J. 1954. Evolution and bird sociality. In: Huxley J, Hardy AC, Ford EB, editors. Evolution as a process. London (UK): Allen & Unwin; p. 71–83.

Gutiérrez-Ibáñez C, Iwaniuk AN, Wylie DR. 2018. Parrots have evolved a primate-like telencephalic-midbrain-cerebellar circuit. Scientific Reports. 8:1.

Harrington KJ, Pole-Evans S, Reeves M, Bechard M, Bobowski M, et al. 2018. Seasonal micro-migration in a farm-island population of Striated Caracaras (*Phalcoboenus australis*) in the Falkland Islands. Movement Ecology. 6:4.

Heinrich B. 1988. Winter foraging at carcasses by three sympatric corvids, with emphasis on recruitment by the raven, *Corvus corax*. Behavioral Ecology and Sociobiology. 23:141–156.

Heinrich B. 1989. Ravens in winter. New York (NY): Simon and Schuster.

Heinrich B, Marzluff JM, Marzluff CS. 1993. Common Ravens are attracted by appeasement calls of food discoverers when attacked. Auk. 110:247–254.

Kutsukake N, Clutton-Brock TH. 2006. Aggression and submission reflect reproductive conflict between females in cooperatively breeding meerkats *Suricata suricatta*. Behavioral Ecology and Sociobiology. 59:541–548.

Lorenz K. 1935. Der Kumpan in der Umwelt des Vogels [Companions as factors in the bird's environment]. Journal für Ornithologie. 83:137–213, 289–413. German.

Mayr E. 1974. Behavior programs and evolutionary strategies. Journal of American Science. 62:650–659.

Miller R, Schiestl M, Whiten A, Schwab C, Bugnyar T. 2014. Tolerance and social facilitation in the foraging behaviour of free-ranging crows (*Corvus corone corone*; *C. c. cornix*). Ethology. 120:1248–1255.

Morrison J. 1999. Methods for gender determination in Crested Caracaras. Journal of Raptor Research. 33:128–133.

Nicholson AJ. 1954. An outline of the dynamics of animal populations. Australian Journal of Zoology. 2:9–65.

Parker GA. 2000. Scramble in behaviour and ecology. Philosophical Transactions of the Royal Society of London B. 355:1637–1645.

Reeves M, Crofts S, Bildstein KL. 2018. Distribution and abundance of breeding Striated Caracaras in the Falkland Islands (Malvinas). Journal of Raptor Research. 52:309–315.

Rexer-Huber K, Bildstein KL. 2013. Winter diet of Striated Caracara *Phalcoboenus australis* (Aves, Polyborinae) at a farm settlement on the Falkland Islands. Polar Biology. 36:437–443.

Signe P, Van Schaik CP. 2000. Dominance and communication: Conflict management in various social settings. In: Aureli F, de Waal FBM, editors. Natural conflict resolution. Berkeley (CA): University of California Press; p. 77–105.

Smith SM. 1978. The "underworld" in a territorial sparrow: Adaptive strategy for floaters. American Naturalist. 112:571–582.

Solaro C, Sarasola JH. 2019. Urban living predicts behavioural response in a Neotropical raptor. Behavioural Processes. 169:103995.

Strange IJ. 1996. The Striated Caracara (*Phalcoboenus australis*) in the Falkland Islands. Author's edition. Falkland Islands.

Suh A, Paus M, Kiefmann M, Churakov G, Franke FA, et al. 2011. Mesozoic retroposons reveal parrots as the closest living relatives of passerine birds. Nature Communications. 2:1–7.