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Unusual object relocation by the Golden Jackal (*Canis aureus*): A case study from South Pelion, Greece

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Abstract
This study documents an unusual behavioral observation of a golden jackal (*Canis aureus*) in South Pelion, Greece, where the jackal relocated a mobile phone from an olive farm to a dense forest 60 meters away. The phone, handled by the owner after consuming a sweet item, was found intact with minor scratches, likely due to its protective case. This behavior occurred in an area with an increasing jackal population, where locals reported daytime sightings of jackals engaging more closely with human settlements. Possible explanations for the relocation include olfactory attraction, exploratory play, or instinctive caching. This case highlights the growing adaptability of golden jackals to human environments and their ability to interact with non-food human objects. The findings suggest a need for further research on jackal cognition and human-wildlife interactions in areas of increasing jackal habituation to human presence.

Keywords: Golden Jackal, *Canis aureus*, object relocation, human-wildlife interactions, animal cognition

Introduction
The golden jackal (*Canis aureus*, Linnaeus, 1758) is a highly adaptable canid species (Guimaraes *et al*. 2021) [1] distributed across Europe (Janosch *et al*. 2012; Kaczensky *et al*. 2024) [2, 3] Asia, and parts of Africa. Known for its opportunistic feeding habits and ability to thrive in diverse environments, the golden jackal has been observed displaying a range of complex behaviors, including scavenging, caching food, and exploring human settlements in search of resources (Frangini *et al*. 2024) [4]. However, interactions involving object relocation—particularly the transportation and concealment of non-food items—are rarely documented in the scientific literature.

In this case study, we report a unique behavioral observation of a golden jackal in South Pelion, Greece, taking a mobile phone from an olive farm and subsequently hiding it approximately 60 meters away in a dense forested area. This incident provides an intriguing insight into potential object manipulation behaviors exhibited by jackals, raising questions about motivation, cognitive processes, and sensory influences guiding such actions.

Previous studies on canid behavior have primarily focused on food caching (Mahoney *et al*. 2024) [5], tool use, and object play in species such as wolves (*Canis lupus*), domestic dogs (*Canis lupus familiaris*), and foxes (*Vulpes vulpes*). While golden jackals have been noted for their intelligence and high adaptability, reports of them engaging in deliberate relocation of human objects remain scarce. The present case highlights an unusual interaction between a wild jackal and a human-associated item, potentially influenced by olfactory cues left on the device by its owner.

This paper aims to document the event in detail, analyze possible explanations for the jackal's behavior, and discuss broader implications for understanding canid cognition and human-wildlife interactions. By examining environmental factors, behavioral motivations, and comparative data from other canid species, we seek to contribute to the growing knowledge of golden jackal ecology and behavior.

Methods
On November 1, 2023, a local resident, Sofia Kiale, reported that her mobile phone had been taken from an outdoor area within an olive farm. The phone had been placed on the ground beside her jacket, as she was gathering olives and pruning trees. Sofia was very close to the phone when the jackal approached it.

The device had been handled by the owner shortly before, after consuming a sweet food item, potentially leaving scent residues that could have attracted the jackal. The phone was left unattended, but she witnessed the jackal in the act of taking it.

The incident occurred in Katavothra, South Pelion, Greece (39.154844730096684, 23.311753057408477). The area is characterized by olive groves interspersed with patches of dense Mediterranean forest. The local climate is typically Mediterranean, with mild, wet winters and dry, warm summers. The region supports a variety of wildlife, including golden jackals, foxes, wild boars, and other mesopredators.

The next day, using Google's "Find My Device" on her ipad, the phone's GPS coordinates were located approximately 60 meters away from the initial site, inside a dense forested patch. A team of three people conducted a manual search by following the coordinates and activating the phone's sound alert. Upon reaching the general location, the searchers had to crawl through thick vegetation to retrieve the phone, which was found intact with minor scratches but no significant damage due to its protective case and screen film.

Results and Discussion

The recorded behavior of the golden jackal raises important questions regarding the cognitive abilities and ecological adaptations of this species. While golden jackals are known to scavenge (Yigrem, 2017) [6], cache food, and explore novel objects, the relocation of a non-food human object is an unusual event that may have been influenced by multiple factors, including curiosity, scent attraction, and environmental familiarity.

Environmental and Behavioral Observations

The area where the phone was discovered was a secluded, densely vegetated forest patch with minimal human disturbance. The phone was not buried under natural debris but was instead situated within dense bushes and branches. Fallen leaves, characteristic of the season, were scattered around it. No other objects or food items were found near the phone, suggesting that the jackal did not attempt to bury it or treat it as food. The concealment of the object in such an area raises questions about the jackal's motivations. Possible explanations include an attraction to the scent left by the owner, investigative behavior, or an instinctive caching response. The absence of other relocated objects in the area suggests that this behavior was not part of a repeated pattern but rather a unique occurrence.

Potential Scent Attraction

Since the phone's owner had consumed a sweet food item prior to handling the device, it is plausible that residual scents played a role in attracting the jackal's attention. This aligns with known canid behaviors where olfactory stimuli influence interactions with objects. However, the deliberate movement and placement of the phone suggest a more complex cognitive process beyond simple attraction to a scent.

Jackal Behavior in the Study Area

Golden jackal populations in Greece (Karamanlidis *et al.* 2023) [7] and particularly in South Pelion appear to be increasing significantly, with numerous unconfirmed reports from locals estimating more than 30 individuals in the area. Additionally, residents report frequent daytime sightings of jackals approaching human settlements and engaging in exploratory behaviors near agricultural fields. This shift in activity patterns—where jackals are becoming more visible during daylight hours and interacting with human environments—suggests an increasing level of habituation to human presence.

Despite this proximity to human activities, no aggressive or threatening behavior has been observed. Instead, the jackals appear to exhibit a heightened level of curiosity, venturing closer to people and their belongings, such as farming equipment and personal items. The observed phone relocation could therefore be a manifestation of this increasing inquisitiveness, possibly reinforced by olfactory cues.

Possible Explanations for the Object Relocation

Several hypotheses may explain the behavior observed in this case study:

Olfactory Attraction: The phone's owner had recently consumed a sweet food item, and residual scent on the device may have triggered an investigative response in the jackal. Canids are known for their acute olfactory capabilities, which influence many of their behaviors, including food-seeking and object interaction.

Exploratory Play Behavior: Juvenile and adult canids sometimes engage in object play, which includes carrying and relocating items out of curiosity. If the jackal was a younger individual, this could explain the seemingly purposeless movement of the phone.

Caching or Concealment Instincts: Some canids instinctively relocate objects to secluded locations, even when they are not food-related. This could be an extension of natural caching behavior, where an animal moves an item to a safer area without immediate intent to consume or interact with it again.

Increased Human-Wildlife Interaction: As jackals become more accustomed to human presence, they may also become more likely to engage with human objects. The increase in sightings and the apparent lack of fear towards humans in South Pelion could contribute to such novel behaviors.

Conclusion

This case study provides a unique insight into the behavior of golden jackals (*Canis aureus*) in South Pelion, Greece, highlighting an unusual incident of object relocation. The mobile phone, taken from an olive farm and concealed in a nearby forest, demonstrates the potential for curiosity-driven behaviors and interaction with human-associated objects in wild canids. While the precise motivation behind this behavior remains speculative, it suggests that jackals may be more cognitively flexible than previously thought, potentially influenced by olfactory cues and environmental factors.

The increasing sightings of jackals, particularly during the daytime and in closer proximity to human activities, reflect a shift in their behavioral patterns and a greater adaptation to human presence. Despite their close interactions with

humans, these jackals exhibit no aggressive behavior, instead showing heightened curiosity toward human objects and activities. This suggests a growing habituation to human settlements, which may lead to further novel behaviors in the future.

The findings from this study open up new avenues for exploring the cognitive capabilities and ecological adaptations of golden jackals, especially as they increasingly interact with human environments. Further research into the causes and frequency of object relocation, as well as other behaviors exhibited by jackals, will help deepen our understanding of their ecology and their interactions with humans, providing insights into the broader implications for human-wildlife coexistence.

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