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Martin Potgieter

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ORNITHOLOGY

Grey-headed Gulls *Chroicocephalus cirrocephalus* foraging in spillway turbulence at Gariep Dam, South Africa

Martin Potgieter*

Bethlehem, South Africa

**potgiemp@telkomsa.net*

Abstract

On 8 March 2026 several Grey-headed Gulls *Chroicocephalus cirrocephalus* were observed foraging over the turbulent outflow below the Gariep Dam wall, during a period of strong overflow. The birds repeatedly flew low over the torrent and frequently entered the dense spray plume immediately below the falling sheet of water. Swifts and swallows were also actively foraging over the same area. The observation suggests opportunistic feeding associated with prey concentrations created by intense hydraulic turbulence below the spillway.

Introduction

The distribution of the Grey-headed Gull *Chroicocephalus cirrocephalus* increased enormously in southern Africa during the 20th century (Brooke 1997, Brooke et al. 1999). Much of the range expansion can be attributed to a rapid utilization of opportunities provided as a by-product of human activities: as examples, they feed on food waste at rubbish dumps (Farkas 1962), on discarded scraps of food at fast food outlets (Potgieter 2025) and roadside picnic sites (Uys 1986), on insects and worms exposed by ploughing (Farkas 1962), and on insects attracted to floodlights at night (Underhill 1987). This note adds a further example of opportunism in this species.

Observation

On 8 March 2026 at approximately 13h45 my wife and I stopped at the wall of the Gariep Dam (30.624°S, 25.505°E) on the Orange River, on the provincial boundary between the Free State and Eastern Cape, South Africa (Figure 1).

The dam was overflowing strongly following good rainfall in the catchment area and large volumes of water were being discharged over the dam wall, producing an extremely turbulent torrent and a dense plume of spray below the spillway Figure 2). The force of the water was such that the spray it created felt like a rainstorm on the road bridge about 630 m downstream (Figure 3).

Figure 1: Satellite view of the Gariep Dam wall area.

Figure 2: Gariep Dam overflowing on 8 March 2026, showing the extent of spillway discharge.

In addition, numerous Grey-headed Gulls repeatedly flew low over the torrent immediately below the spillway. Individuals frequently entered the dense spray and mist generated by the falling water and at times flew very close to the edge of the plunging sheet of water before circling back over the turbulent outflow. The gulls remained airborne throughout the observation period, but occasionally dipped toward the water surface before returning to the spray plume. The majority of the gulls present appeared to be adults in non-breeding plumage, identifiable by the reduced grey head markings and duller bill colouration, with one or two immature birds also noted among them (Figure 4-6).

The birds appeared extremely small relative to the massive flow of water passing over the dam wall. The vertical drop at Gariep Dam is c. 73 m, comparable to the lower range of heights recorded at the famous Victoria Falls, Zimbabwe. Even a moderate spillway discharge of about 3 000 $m^3 s^{-1}$ represents roughly three million kilograms of water falling every second. The rate of gravitational energy release from such a flow exceeds two gigawatts, a magnitude compa-

Figure 3: Gariep Dam overflowing – viewed from the road bridge across the Orange River, 8 March 2026.

Figure 4: Grey-headed Gulls *Chroicocephalus cirrocephalus* flying low over the turbulent water directly below the overflowing Gariep Dam wall, 8 March 2026.

Figure 5 & 6: Grey-headed Gull *Chroicocephalus cirrocephalus* flying low over the turbulent water directly below the overflowing Gariep Dam wall, 8 March 2026.

rable to the energy generated by large natural waterfalls such as Victoria Falls during periods of high flow. The resulting turbulence, spray and strong air currents create an exceptionally dynamic environment immediately below the spillway.

Discussion

Grey-headed Gulls are opportunistic feeders that take a wide range of prey, including aquatic invertebrates, insects and small vertebrates, often captured from the water surface or by aerial foraging (Crawford & Hockey 2005). This is consistent with the broader foraging repertoire documented for gulls, which includes surface-dipping and hovering flight over prey concentrations, with smaller species being considerably more manoeuvrable aerially than larger gulls (Burger & Gochfeld 1996). More broadly, gulls are highly opportunistic, capable of taking almost any prey item, whether live or carrion, that can be swallowed and frequently display considerable ingenuity in how they obtain food (Winkler et al. 2020). This behavioural flexibility enables them to exploit ephemeral feeding opportunities created by environmental disturbance (Burger & Gochfeld 1996).

The presence of one or two immature birds at the spillway is consistent with documented patterns in gull foraging ecology, where younger individuals tend to spend more time foraging and are more likely to exploit novel or ephemeral feeding opportunities as they develop foraging proficiency (Burger & Gochfeld 1996).

Turbulent aquatic environments frequently concentrate prey and are therefore attractive feeding sites for opportunistic birds. Gulls are well documented exploiting prey concentrated or disturbed by external agents, including marine mammals, other seabirds, and large wading birds (Burger & Gochfeld 1996); the hydraulic disturbance of a spillway represents a physical analogue to these biotic associations.

Hydroelectric dams provide well-documented examples of this phenomenon. Reservoir outlets and dam tailraces often attract feeding gulls because fish passing through turbines may be injured or killed, creating easily exploited food resources downstream (Ruggerone 1986).

It should be noted that most studies documenting gull feeding at hydroelectric tailraces originate from North America, where hydroelectric generation at large dams is used more extensively than in South Africa. The hydroelectric station at Gariep Dam contains four turbines with a total generating capacity of c. 360 MW (Eskom 2023). These turbines are used primarily to supplement electricity supply during periods of demand and are therefore not in continuous operation. When operating, however, substantial volumes of water are discharged through the turbines into the tailrace below the dam wall, producing strong turbulence similar to that known to attract feeding gulls at hydroelectric dams elsewhere.

Although the conditions observed on 8 March were associated with spillway overflow rather than turbine discharge, the enormous volume and force of the water cascading over the dam wall may have created comparable and possibly more extreme conditions. Such turbulence may disorient fish or aquatic organisms and may also concentrate flying insects within the spray plume, providing an additional prey resource for aerial-feeding birds.

The simultaneous presence of actively foraging swifts and swallows supports the possibility that insect concentrations may have been present in the spray plume (Figure 7). Aquatic insects often emerge in large numbers from water bodies and can form an important food resource for aerial insectivores such as swallows, particularly where environmental conditions concentrate prey (Baxter et al. 2005).

Grey-headed Gulls, as a hooded gull associated with inland lakes and rivers, are known to take insects by aerial hawking, and gulls of this group are documented foraging alongside other aerial insectivores during mass insect emergences over water (Burger & Gochfeld 1996).

Conclusion

The behaviour observed suggests opportunistic feeding by Grey-headed Gulls in response to prey concentrations created by intense hydraulic turbulence below the spillway. The repeated flight of birds into the spray plume while remaining airborne is consistent with aerial feeding behaviour commonly employed by gulls when targeting small prey items. Grey-headed Gulls have demonstrated similar opportunistic foraging responses to localised prey concentrations at other South African localities (Potgieter 2025), underscoring the species' capacity to exploit ephemeral feeding opportunities.

Figure 7: Grey-headed Gull *Chroicocephalus cirrocephalus* and White-rumped Swift Apus Caffer (small speck upper right of photograph) foraging directly below the overflowing Gariep Dam wall, 8 March 2026.

Spillway discharge during periods of high inflow may therefore create temporary feeding opportunities similar to those known from hydroelectric tailraces, but potentially on a much larger scale because of the enormous volume of water involved. Under such conditions large dams may briefly create artificial waterfall environments with turbulence and prey concentrations comparable to those occurring at major natural waterfalls.

Further observations during future spill events at large dams could help determine whether Grey-headed Gulls and other waterbirds regularly exploit this category temporary feeding opportunity. The examples provided in the Introduction suggest that the answer will be positive.

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