Black-winged Kite (Elanus caeruleus) and the Parys Wetland Complex

Habitat relationships, population signals, threats, mitigation, and rehabilitation considerations

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Abstract

The Black-winged Kite is a mobile open-country raptor whose relationship with wetlands is centred on prey-rich margins, herbaceous cover, hunting visibility, and nearby perches. This report evaluates that ecological relationship, compares it with habitat in the Parys Wetland Complex, verifies locally recorded potential prey, analyses Southern African Bird Atlas Project 2 (SABAP2) records for the Parys intake-area pentads, Fezile Dabi, the Free State, and South Africa, and reviews threats, mitigation, and rehabilitation evidence. The Parys Wetland Project verifies a local four-striped grass rat and other candidate prey taxa, but provides occurrence rather than diet or abundance evidence. Local SABAP2 reporting fell from 49.4% in 2007–2011 to 24.3% in 2012–2016, and reached 29.5% in 2022–25 August 2026; 7 of 11 pentads recorded the species in every period. These checklist patterns are not individual-bird counts. More importantly, a 2026 road-count study estimated a 47% decline over 16 years across a large central South African region while SABAP2 trends for that region increased. The species is Near Threatened regionally because of ecosystem modification, although globally Least Concern. The wetland complex can support foraging and movement, but degraded hydrology, pollution, infrastructure, invasive vegetation, roads, fences, and poison-led rodent control may reduce habitat quality or increase mortality. Species-specific rehabilitation outcomes remain too sparse to judge captivity tolerance.

Keywords: Black-winged Kite; Elanus caeruleus; Parys; Fezile Dabi; Free State; wetland-associated; wetland margins; local prey; iNaturalist; SABAP2; raptor decline; rehabilitation; rodenticide

Purpose of the research

This research was undertaken to determine how the Black-winged Kite relates to wetland habitats; summarise its habitat, diet, movement, and breeding ecology; compare those requirements with the Parys Wetland Complex; verify potential prey recorded locally; compare SABAP2 population signals in the Parys intake-area pentads with Fezile Dabi, the Free State, and South Africa; identify risks and mitigation; and evaluate evidence on captivity, treatment, and release after injury. It is written as a self-contained report so readers do not need the original research questions.

Key findings

- Under Parys WADER's operational framework, the Black-winged Kite is classified as wetland-associated (category 3). It depends on open, prey-rich terrestrial habitat rather than open water or saturated soil, and normally uses wetland edges, seep grassland, floodplain margins, and adjacent pasture or cultivation rather than dense reedbeds.
- The Parys Wetland Complex offers useful foraging structure through valley-bottom and seep wetlands, herbaceous margins, remnant natural vegetation, an urban–grassland mosaic, the Vaal River corridor, and abundant artificial perches. Its ecological condition is nevertheless mostly poor, and several of the same landscape elements that facilitate hunting also expose kites to collision, electrocution, entanglement, disturbance, and contaminants.
- The Parys Wetland Project verifies local occurrence of a four-striped grass rat, Highveld Mole-rat, large insects, and small passerines that fit documented prey categories. Only the grass rat is a strong mammalian candidate; none of the records proves local predation or prey abundance.
- Across the 11 Parys intake-area pentads, SABAP2 reporting fell from 49.4% in 2007–2011 to 24.3% in 2012–2016, then reached 29.5% in 2022–25 August 2026. 7 of 11 pentads recorded the species in every period. This suggests reduced encounter frequency without a detected contraction of the repeatedly occupied local footprint.
- Fezile Dabi reporting fell from 75.9% to 65.4%, then recovered to 70.9%. Free State reporting fell from 59.9% to 45.3%, then recovered to 48.5%. Neither area has returned to its earliest SABAP2 level.
- A 2026 road-count study estimated a 47% decline in central South Africa from 2009 to 2025. The study also demonstrated that SABAP2 reporting trends can increase while abundance declines. Atlas reporting should therefore be treated as a distribution and encounter index, not a population census.
- The 2025 regional Red Data Book uplisted the species from Least Concern to Near Threatened, citing ecosystem modification. The global assessment remains Least Concern and describes the global trend as stable, but no defensible South African total population estimate was found.
- The most important management priorities at Parys are to retain a structurally diverse grassland–wetland mosaic, prevent further wetland deterioration, reduce sewage and chemical pollution, replace poison-led rodent control with integrated methods, make fences and electricity infrastructure safer, retain nest and roost trees, and implement repeatable road-count and atlas monitoring.
- There is no species-specific study showing that Black-winged Kites cope either well or poorly with prolonged captivity. South African records document 11 admissions during 2004–2011, but not their individual outcomes. Rehabilitation should therefore be short, quiet, clinically rigorous, and focused on complete flight, foot, visual, feather, and hunting function before release.

1. Introduction

The Black-winged Kite, formerly widely called the Black-shouldered Kite in southern African literature, is a conspicuous hovering raptor distributed through Africa and parts of Europe and Asia. Earlier assessments regarded it as an agricultural beneficiary because clearing, cultivation, irrigated land, grain production, utility lines, and alien trees created open hunting areas, rodent prey, perches, and nest sites. That historical narrative remains partly correct, but it is no longer sufficient for South Africa. The 2025 National Biodiversity Assessment records a genuine regional status change from Least Concern to Near Threatened, with ecosystem modification identified as the principal driver. (SANBI and BirdLife South Africa, 2025)

The apparent contradiction—adaptation to transformed landscapes alongside a contemporary decline—can be resolved by recognising that land-use effects are not linear. Moderate opening of formerly wooded habitat may benefit a hovering rodent predator, whereas intensive cultivation, loss of herbaceous refuges, prey suppression, poisons, dense urbanisation, and hazardous infrastructure can make the same landscape an ecological trap. Wetlands are relevant within this broader mosaic, especially in grassland regions where moist margins sustain vegetation and small mammals through variable rainfall.

2. Methods

2.1 Literature and evidence review

The review prioritised full-text research from South African universities and southern African authors, followed by peer-reviewed international studies where they addressed evidence gaps. Sources were used only for findings that could be checked in full text. Current conservation status was verified against the 2025 South African National Biodiversity Assessment and BirdLife International's species factsheet. Older common names were retained only when reproducing source titles.

2.2 Parys Wetland Complex

Habitat conditions were extracted from the wetland delineation and ecological-condition report supplied to Parys WADER. Field validation occurred on 16 May 2025. Seven wetlands were delineated and classified as channelled valley-bottom, unchannelled valley-bottom, and unchannelled seep systems. Boundary accuracy was moderate because vertic and melanic soils obscured some standard hydric-soil indicators. Adjusted present ecological categories ranged from C to F: two wetlands were C, three D, one E, and one F. The report documented artificial drains, roads, berms, an electricity substation and other infrastructure, sewage spills, industrial and business runoff, pesticides, oils, nutrients, invasive plants, and heavily transformed catchments.

2.3 Population analysis

SABAP2 full-protocol records for species code 130 were analysed in four windows: 2007–2011, 2012–2016, 2017–2021, and 2022–25 August 2026. The last window is incomplete. Reporting rate was calculated as the percentage of full-protocol cards that reported at least one Black-winged Kite. An occupied pentad was a 5 × 5 minute atlas cell with at least one detection in the window. Reporting rate is a presence-on-checklist measure; it does not count individuals. (Brooks et al., 2022)

The local analysis used the Parys intake-area pentads selected by Parys WADER as representative of Parys and the surrounding intake-source landscape. The supplied list contained 2655_2730 twice; exact duplicates were removed, leaving 11 unique pentads. The pentads were: 2645_2720, 2645_2725, 2645_2735, 2650_2720, 2650_2725, 2650_2730, 2650_2735, 2655_2720, 2655_2725, 2655_2730, 2655_2735. Fezile Dabi was represented by 270 pentads whose centres fell within the official DC20 district polygon. Free State summaries used the BirdMap province endpoint. National totals are raw positive full-protocol cards because a comparable time-specific national card denominator was unavailable. (BirdMap, 2026; Municipal Demarcation Board, 2018)

2.4 Parys WADER wetland terminology

Parys WADER uses a three-category intake and communication framework: (1) birds that live on water; (2) birds that live at the edges of water; and (3) birds that use or depend on wetlands for important ecological functions such as hunting or nesting. Under this operational framework, a species that is not strictly wetland-dependent but may use wetland habitat for hunting is described as wetland-associated. These categories are used for Parys WADER intake, research, and communication; they are not formal taxonomic or Red List categories. The Black-winged Kite is treated as a wetland-associated category 3 species in this report.

2.5 Local potential-prey verification

Local occurrence was checked through the Parys Wetland Project on iNaturalist (project 224400), using research-grade observations marked as wild and available on 25 August 2026. The filtered project contained 10,874 observations, including 17 mammal, 128 insect, and 58 bird species. Records were matched to prey categories established by the dietary literature. Observation counts are shown only to make the verification reproducible: they are observer-dependent occurrence records, may include repeated individuals, and are not prey-abundance estimates or evidence of predation.

3. Species ecology and relationship with wetlands

3.1 Habitat

Black-winged Kites favour open grassland, savanna, fynbos, pasture, fallow land, cropland mosaics, and semi-arid land where prey is visible and scattered trees, poles, or utility lines provide elevated perches. They are scarce or absent from closed forest, dense woodland, and the most arid desert. In the first southern African atlas they were most abundant in the grasslands of the former Transvaal, the Free State, KwaZulu-Natal, and the south-western Cape, particularly where cultivation was interspersed with open natural habitat. (Mendelsohn, 1997)

A used-versus-available study in Eswatini agroecosystems found selection for savanna and herbaceous vegetation taller than 15 cm, low tree density around hunting perches, and no overall selection for or against agricultural land. Ninety-five per cent of observations were on power lines. The authors interpreted moderate herbaceous cover as valuable because nearly bare, mown, or burnt ground supported fewer rodents, while dense canopy obstructed aerial hunting. Artificial perches may promote kite use, but safe standalone perches are preferable to encouraging use of hazardous electricity structures. (Howard et al., 2016)

3.2 Diet and hunting

The species is an opportunistic small-mammal specialist. Southern African work identifies rodents as its principal prey, supplemented by large insects, small birds, reptiles, frogs, and other small vertebrates. It hunts mainly by still-hunting from a perch and by hovering over open ground. Perch hunting has lower energetic cost, while hovering allows the kite to exploit open habitat without perches. Prey is located visually and captured on the ground. This dietary dependence explains both its pest-control value and its vulnerability to changes in rodent abundance and secondary poisoning. (Mendelsohn, 1982; Mendelsohn and Jaksić, 1989)

3.2.1 Locally verified potential prey

The iNaturalist project verifies that taxa matching documented Black-winged Kite prey categories occur within the Parys Wetland Project. The strongest mammalian candidate is a four-striped grass rat identified as Rhabdomys chakae. The record confirms local occurrence of a small grassland rodent, but neither the image record nor the reviewed literature proves that a Parys kite captured it. A second locally recorded mammal, the Highveld Mole-rat Cryptomys pretoriae, is fossorial; its occurrence is verified but its availability and prey status for Black-winged Kites remain unresolved. Large insects and small passerines provide plausible supplementary prey categories. Some conspicuous locusts may be chemically defended, so occurrence must not be equated with suitability.

Locally recorded taxon	Project records	Dietary relevance and evidential status
Four-striped grass rat (Rhabdomys chakae)	1	Locally verified small rodent; strong match to the principal rodent prey category, but no local predation record.
Highveld Mole-rat (Cryptomys pretoriae)	13	Locally verified fossorial mammal; availability to kites and taxon-specific predation are unconfirmed.
Large grasshoppers and locusts	Elegant grasshopper 16; green milkweed locust 13; garden locust 3; red-adorned grasshopper 2; green tree locust 1	Matches the documented large-insect supplement; individual species are candidates only, and palatability is not established.
Mantises, molecricket and beetle	South African mantis 3; African false flower mantis 3; African twig mantis 2; African molecricket 2; African black beetle 1	Locally verified invertebrates within a broad supplementary prey class; no taxon-specific local predation evidence.
Small passerines	Southern Masked Weaver 10; Southern Red Bishop 5; African Stonechat 4; several finches, prinias, sparrows and larks 1–2 each	Locally verified potential occasional prey; no local kill, pellet, or nest-prey record.

3.3 Movement

Black-winged Kites are resident in the sense that they are not regular long-distance seasonal migrants, but individuals are highly mobile, nomadic, and irruptive in response to prey and rainfall. Of 82 southern African ring recoveries summarised for the first atlas, 11 (13%) were more than 100 km from the ringing site, and birds ringed in southern Africa were recovered in Mozambique, Malawi, and Uganda. In one Transvaal study area, approximately one quarter of the local birds turned over each month. Communal roosts of tens to hundreds of birds may help individuals locate productive hunting areas. (Mendelsohn, 1983, 1997)

Modern tracking and marking in Spain confirms the capacity for wide juvenile dispersal. Among 47 juveniles, mean maximum distances from natal nests were 26.15 km for males and 43.79 km for females; one male and two females travelled more than 100 km. These European estimates should not be transferred as local Parys parameters, but they support the interpretation that sudden local changes can reflect redistribution as well as survival or recruitment. (Rivera et al., 2022)

3.4 Breeding

Breeding may occur in any month in southern Africa, with regional peaks linked to rodent availability. A pair constructs a loose stick nest in a tree or, occasionally, on a human structure. Clutches usually contain several eggs; incubation and nestling stages each last approximately one month. Both parents participate, but the male becomes the main food provider and may continue feeding fledglings after the female leaves. Southern African post-fledging dependence has been reported at approximately 80 days, longer than the roughly 40 days described in Spain. This extended period matters in rehabilitation: a healthy grounded fledgling may still depend on its parents and should not automatically be removed. (Mendelsohn, 1997; Rivera et al., 2022)

3.5 Wetland association under the Parys WADER framework

Under the Parys WADER framework, the Black-winged Kite is classified as wetland-associated (category 3), rather than as a bird that lives on water or at its immediate edge. It is not strictly wetland-dependent, but it can use wetland margins for hunting and movement. It does not require open water, aquatic prey, reedbeds, or saturated soils. Wetlands become valuable when their margins sustain rough grass, sedges, and rodent refuges; when adjacent grazing, mowing, fire, or seasonal drying creates accessible hunting patches; and when scattered trees or safe perches are available. A South African study at a rehabilitated Gauteng wetland recorded four Black-winged Kite observations: three in grassland and one in marsh habitat. The sample was too small for a species-specific statistical conclusion, but it is consistent with use of the wetland complex primarily through its grassland component. (Botha and Haussmann, 2023)

4. Habitat offered by the Parys Wetland Complex

Kite requirement	Parys Wetland Complex offer	Assessment
Open herbaceous foraging habitat	Valley-bottom and seep wetlands, wetland margins, and remnant natural vegetation	Potentially suitable, especially where vegetation is neither bare nor densely invaded
Small-mammal prey	Moist herbaceous margins and the wetland–grassland mosaic; the Parys Wetland Project verifies a local four-striped grass rat and Highveld Mole-rat	Occurrence evidence now exists, but no formal prey-abundance survey, pellet study, or local predation record is available
Clear sightlines	Open wetland margins, roads, drains, lawns, and disturbed land	Useful for hunting, but disturbance and roads may create ecological traps
Perches and nest sites	Trees, poles, utility lines, substation structures, and urban infrastructure	Abundant; safe trees and purpose-built perches are beneficial, live electrical structures are hazardous
Movement corridor	Wetland complex lies strategically between urban Parys and the Vaal River	May connect foraging areas, although kite movement has not been tracked locally
Water and ecosystem function	Water purification, flow regulation, erosion control, and recreation remain despite degradation	Maintaining function supports the prey and vegetation mosaic

Kite requirement	Parys Wetland Complex offer	Assessment
Ecological condition	Two wetlands C, three D, one E, and one F	Mostly degraded; suitable patches persist but resilience is reduced
Contaminants and infrastructure	Sewage, oils, pesticides, nutrients, industrial runoff, drains, roads, berms, fences, and electricity infrastructure	High management priority because effects can combine across prey, habitat, and direct injury pathways

Overall, the complex is suitable as part of a wider foraging landscape, not as a self-contained Black-winged Kite habitat. Its value depends on maintaining a heterogeneous edge: intact wetland vegetation and rough grass for prey, interspersed with accessible hunting patches and safe perches. Uniform mowing, intensive burning, dense woody invasion, or further hard-surface development would each reduce one or more of these functions. Conversely, simply leaving all degraded vegetation unmanaged could produce dense invasive cover that obstructs hunting and suppresses native habitat.

5. Population evidence

5.1 What can and cannot be counted

No study has counted the number of individual Black-winged Kites in Parys, Fezile Dabi, the Free State, or South Africa at repeated, comparable intervals. Atlas cards record whether at least one kite was reported, not how many were present. A reporting-rate decline may reflect fewer birds, redistribution, altered habitat use, observer behaviour, or some combination. Because the species is mobile and conspicuous, reporting rates are useful local indicators, but they should be tested against repeated abundance counts.

Scale	2007–2011	2012–2016	2017–2021	2022–25 Aug 2026
Parys 11-pentad intake-area block	43 / 87 (49.4%); 7 occupied	34 / 140 (24.3%); 7 occupied	37 / 148 (25.0%); 7 occupied	36 / 122 (29.5%); 7 occupied
Fezile Dabi District	835 / 1,100 (75.9%)	944 / 1,444 (65.4%)	782 / 1,132 (69.1%)	929 / 1,311 (70.9%)
Free State	3,731 / 6,225 (59.9%)	2,729 / 5,636 (48.4%)	2,834 / 6,250 (45.3%)	3,420 / 7,050 (48.5%)
South Africa	20,660 detections	24,721 detections	29,238 detections	26,919 detections

Values are detection cards / full-protocol cards (reporting rate), except for South Africa, where only raw detection-card totals are shown. The national totals cannot be compared as a reporting rate because the required period-specific denominator was unavailable. The final period is incomplete.

5.2 Parys intake-area pentads

All 11 unique pentads received full-protocol coverage in every five-year window. The species occupied 7 pentads in each period. Reporting declined sharply between the first and second windows and is 40% below the 2007–2011 rate, despite partial recovery. The most defensible interpretation is no detected contraction in the repeatedly occupied footprint, but fewer kite-positive checklists than in the earliest SABAP2 years. The modest card totals make the signal sensitive to survey location and timing.

5.3 Fezile Dabi District

Fezile Dabi shows the same broad sequence as Parys but with a much larger sample. Reporting declined from 75.9% to 65.4%, then recovered to 70.9%. The fraction of surveyed pentads with detections remained broadly stable: 217 of 266 (81.6%), 138 of 171 (80.7%), 98 of 124 (79.0%), and 123 of 148 (83.1%). Surveyed area varied greatly among periods, so the absolute number of occupied pentads should not be compared without the surveyed denominator. Current reporting remains 5.0 percentage points, or 6.6% relatively, below the first window.

5.4 Free State

The provincial signal is more concerning. Reporting fell from 59.9% to 48.4%, reached 45.3% in 2017–2021, and recovered only to 48.5% in the current window. The current value is 11.4 percentage points, or 19% relatively, below 2007–2011. Historical context is consistent: the species appeared on approximately 60% of Free State atlas lists during the first atlas period, close to the first SABAP2 window. The contemporary provincial signal therefore suggests a sustained reduction in encounter frequency rather than a short-lived local fluctuation.

5.5 South African evidence

The first southern African atlas recorded the species in 2,625 quarter-degree cells, with 59,312 records and a mean reporting rate of 43.1% across its mapped southern African range. An older estimate of 44,000 birds applied to the former Transvaal, not to South Africa as a whole, and must not be presented as a current national population. No modern national estimate of mature individuals was found. (Mendelsohn, 1997)

The strongest modern abundance evidence comes from 752 repeated road transects covering 391,789 km across a large central South African region from 2009 to 2025. Black-winged Kites were recorded on 378 of 725 resident-species transects, with 1,767 individuals and a raw abundance of 0.47 birds per 100 km. The fitted model estimated a statistically significant 47% decline over 16 years. In contrast, the matched SABAP2 model produced an increasing slope. Across all assessed species, only half of the road-count and SABAP2 trend directions agreed. This study demonstrates that rising checklist detections or reporting rates can coexist with declining abundance. (Zuluaga et al., 2026)

These road counts do not cover every South African biome and should not be converted into a national number of birds. They do, however, include the central grassland and dryland landscapes most relevant to the Free State comparison and provide stronger evidence of numerical decline than atlas presence data alone. The regional uplisting to Near Threatened is therefore supported by an independent abundance signal.

6. Risks and mitigation

Risk	Evidence and relevance	Mitigation
Ecosystem modification and habitat simplification	Regional status driver. Conversion, hard surfaces, intensive cultivation, uniform mowing, altered fire, drainage, dense invasion, and loss of margins can reduce prey or hunting access.	Prevent further wetland deterioration; retain a mosaic of native rough grass, sedge margins, shorter hunting patches, and scattered trees; manage fire, mowing, and grazing adaptively rather than uniformly.
Rodenticides and pesticides	Rodent-specialist diet creates a direct secondary-exposure pathway. Controlled work has shown transfer and accumulation of anticoagulant rodenticide from rats to Black-winged Kites.	Use integrated and ecologically based rodent management; remove food and shelter sources; trap where appropriate; avoid routine second-generation anticoagulants; document all pesticide use and investigate suspect deaths toxicologically.
Road collision	Road verges attract hunting kites, while traffic causes severe raptor trauma. Collision injuries have a poorer rehabilitation prognosis.	Map carcasses and admissions; manage prey-attracting verge hotspots away from high-speed sections where possible; use targeted speed reduction and warning signs; avoid placing attractive perches immediately beside dangerous roads.
Fences, wires, thorns, and entangling plants	Direct Black-winged Kite mortality and entanglement in thorny vegetation are reported; fences and loose wire are recognised raptor admission causes.	Audit fence hotspots; remove loose mesh, wire, twine, and netting; replace unnecessarily hazardous strands; retain safe visibility; manage invasive bristly plants where they present demonstrated entanglement risk.
Electricity infrastructure	Power lines provide heavily used perches, creating inferred electrocution and collision exposure even where local species-specific mortality has not been measured.	Fit raptor-safe pole-top insulation and perch deterrence at dangerous components; provide safe offset perches; record and report incidents; route new lines away from high-use wetland margins where practicable.
Pollution and sewage	The Parys report documents sewage, oils, pesticides, nutrients, and industrial runoff. Effects may act through prey, direct exposure, or reduced ecosystem function.	Repair sewage infrastructure; enforce spill response; monitor water, sediment, and small-mammal contaminants; maintain vegetated buffers; prevent dumping and contaminated runoff.
Nest and roost disturbance	Tree removal, repeated disturbance, and loss of communal roosts can displace birds or cause breeding failure.	Identify and retain active nest and roost trees; establish temporary breeding buffers; schedule noisy works outside active nesting where possible; preserve suitable replacement trees.
Climate variability and prey fluctuations	Drought and altered rainfall affect rodents, breeding, and nomadic movement. Local absence may reflect prey failure as well as mortality.	Maintain connected, heterogeneous habitat and wetland function; monitor rodents and kites alongside rainfall; avoid interpreting a single dry year as a long-term population trend.
Persecution	The species may be shot or poisoned through mistaken perceptions of predation or general predator control.	Community education should emphasise rodent-control benefits and legal protection; provide rapid advice for conflict cases; investigate deliberate poisoning or shooting.

Rodenticide risk is not merely theoretical for this species. An experimental prey-to-predator study found that exposed lesser ricefield rats survived long enough to increase predation opportunity and that residues accumulated in Black-winged Kites over short periods. The compounds, application patterns, and exposure rates differ from South Africa, so the study does not measure Parys risk, but it confirms the biological pathway. (Lin et al., 2022)

7. Rehabilitation and captivity after injury

7.1 What the evidence shows

Published evidence is insufficient to say that Black-winged Kites cope either well or poorly with captivity. A KwaZulu-Natal raptor centre admitted 11 individuals between 2004 and 2011, but species-specific diagnoses, length of stay, and outcomes were not reported. Across all 547 raptors in that study, motor-vehicle and building collisions were the most frequent known causes, the overall release rate was 38%, rescuers waited an average of 3.8 days before admission, and approximately half of the birds were fed during the delay. These figures describe the centre's entire raptor caseload, not Black-winged Kites alone. (Thompson et al., 2013)

A later study at the same centre recorded 242 raptors from 33 species in 2015–2016. No Black-winged Kite appeared in the published species table. Collision trauma accounted for 52.1% of admissions, and 48% of all raptors were released. Birds admitted after collisions were significantly less likely to be released than grounded birds or orphaned chicks. Reason for admission was the only significant predictor among the tested variables. These data support careful prognosis after collision but cannot provide a Black-winged Kite release probability. (Maphalala et al., 2021)

7.2 Likely captivity requirements

The following assessment is an inference from the species' ecology and general raptor rehabilitation evidence. A Black-winged Kite is a light, visually hunting predator that must hover, brake, turn, land accurately, grip prey, and remain behaviourally wary. A bird may appear able to fly in a small cage while lacking the endurance, symmetry, fine control, or hunting competence required in the wild. Captivity should therefore be regarded as a temporary treatment environment rather than proof of adaptation to confinement.

- House the kite in a quiet, visually sheltered enclosure with minimal unnecessary handling and no public display during rehabilitation.
- Provide stable, varied-diameter perches that protect feet and allow normal posture without damaging tail or flight feathers.
- Use nutritionally complete whole prey or an appropriately formulated veterinary diet; muscle meat alone is not adequate for prolonged care.
- Maintain species-appropriate daylight, hygiene, ventilation, and biosecurity, while preventing contact with domestic animals and non-releasable display birds.
- After medical stabilisation, use progressive physiotherapy and flight conditioning in an enclosure long enough to assess level flight, turning, ascent, controlled landing, hovering or equivalent aerial control, and endurance.
- For juveniles, prevent imprinting and habituation, and distinguish a normally dependent fledgling from an orphan. Where safe and clinically appropriate, reunification with parents is preferable to hand-rearing.

7.3 Risks along the rehabilitation journey

Stage	Principal risks	Risk reduction
Rescue and transport	Delay, dehydration, hypothermia or heat stress, incorrect food or fluids, further wing damage, and handling stress	Immediate advice from a permitted rehabilitator; dark, ventilated box; no forced feeding; prompt veterinary assessment
Diagnosis and triage	Missed fractures, joint or soft-tissue damage, eye injury, neurological trauma, internal bleeding, electrocution burns, or poisoning	Full examination, imaging where indicated, ophthalmic and neurological assessment, clotting/toxicology when exposure is plausible, and realistic welfare-based prognosis
Immobilisation and treatment	Joint stiffness, tendon adhesions, muscle loss, wing contracture, pressure lesions, pododermatitis, feather breakage, and treatment stress	Early controlled range-of-motion work when medically safe, suitable perches and substrate, regular weight and feather checks, and the shortest safe treatment period
Nutrition	Weight loss, nutritional secondary hyperparathyroidism, poor feather quality, or inappropriate dependence on hand feeding	Whole-prey nutrition, documented intake and mass, gradual return to self-feeding, and veterinary supplementation only when indicated
Behaviour	Habituation, imprinting, abnormal aggression, loss of predator avoidance, or inability to hunt	Minimal human contact, visual barriers, conspecific-sensitive management, and objective behavioural assessment
Flight conditioning	Re-injury, apparent flight in a small space despite poor endurance or control, and damage to primary or tail feathers	Progressive large-enclosure conditioning; assess symmetry, manoeuvrability, landing, stamina, and complete functional plumage
Pre-release decision	Premature release, ongoing medication, incomplete wing or foot function, poor vision, inadequate body condition, or failure to capture prey	Use a structured release protocol covering health, treatment, feeding, flight, and behaviour; do not release merely because the bird can leave a perch
Release and post-release	Return to the original hazard, unsuitable weather, low prey, territorial conflict, disorientation, starvation, or unrecorded mortality	Release near the origin unless the hazard persists; select safe weather and habitat; ring and, where feasible, track; investigate post-release deaths

A 2025 expert-derived raptor release protocol identified 55 candidate indicators across health, flight, treatment, feeding, and behaviour. The central principle is that absence of obvious disease is insufficient: a releasable raptor should have complete functional recovery, intact flight and tail feathers, appropriate flight and hunting ability, normal avoidance behaviour, and no dependence on continuing treatment. The protocol is general and has not yet been validated specifically in Black-winged Kites. (Artigas and Ugaz Ruiz, 2025)

8. Recommended monitoring programme for Parys WADER

1. Establish fixed road-count routes through the 11-pentad Parys intake-area block and repeat them at comparable times, seasons, speeds, and observer effort. Record individual numbers, age class where possible, perch type, behaviour, and exact location.
2. Continue SABAP2 full-protocol cards, but report reporting rate, total card effort, occupied pentads, and road-count abundance together. Do not report raw sightings as population size.
3. Map nests, communal roosts, regular hunting perches, fence entanglements, road casualties, electrocutions, and rehabilitation admissions. Protect personal or sensitive nest-location data when results are shared.
4. Pair bird monitoring with rodent indices, rainfall, vegetation height and cover, mowing, fire, grazing, pesticide and rodenticide use, sewage incidents, and wetland water-quality indicators.
5. Create a standard carcass and injury protocol: photographs, coordinates, circumstances, necropsy where appropriate, liver toxicology for suspected poison, and structured outcome records through rehabilitation and post-release monitoring.
6. Review results annually but assess trend over at least five years. A mobile rodent specialist can fluctuate sharply in a single season without indicating sustained population change.

9. Limitations

- The 11-pentad Parys intake-area block is an analytical neighbourhood selected from intake locations. It does not follow the exact wetland boundary, a home range, or a municipal boundary.
- SABAP2 records are presence data. They do not give the number of individual kites and may be affected by observer behaviour, survey timing, app use, route choice, and changing coverage.
- The 2022–2026 period ends on 25 August 2026 and is incomplete.
- Fezile Dabi occupied-pentad totals changed partly because the number of surveyed pentads changed. Occupancy fractions are more comparable than raw occupied counts.
- The central South African road-count study provides important abundance evidence but is not a wall-to-wall national census and cannot be converted into a national population estimate.
- The wetland delineation report assessed wetland condition, not Black-winged Kites, prey, contaminants, or bird mortality. The iNaturalist project adds opportunistic occurrence evidence for potential prey but not prey abundance or diet. Habitat-use conclusions remain ecological comparisons rather than direct local tracking or feeding results.
- No species-specific rehabilitation outcome or post-release survival study was found for Black-winged Kites in South Africa. Rehabilitation guidance therefore combines limited species records with general raptor evidence and explicit inference.

10. Conclusion

Under Parys WADER's terminology, the Black-winged Kite is wetland-associated because wetland–grassland edges can provide small-mammal prey, moderate herbaceous cover, open hunting space, and safe perches. This association is functional, not evidence that the species is strictly wetland-dependent. The Parys Wetland Project now verifies local occurrence of potential prey in relevant diet categories, most notably a four-striped grass rat, but no local feeding study establishes prey use or abundance.

Local and district atlas reporting has improved since its early low but remains below the earliest SABAP2 baseline; the Free State deficit is larger. Across the 11 Parys intake-area pentads, current reporting is 29.5% compared with 49.4% in 2007–2011, while 7 pentads recorded the species in every period. These data do not prove the number of kites has declined. Independent road counts nevertheless provide credible evidence of a 47% decline across central South Africa.

Rehabilitation can save individuals, but it should not be described as predictably successful for this species. The evidence supports rapid rescue, specialist veterinary care, minimal-stress captivity, objective restoration of flight and hunting function, hazard-aware release, and post-release monitoring. Prevention of injury and poisoning remains more certain and more scalable than rehabilitation after harm.

Research assistance

Prepared by Marisa Louw with literature-search, data-analysis, synthesis, and drafting assistance from ChatGPT by OpenAI, using a customised Deep Academic Research workflow.

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