BIRDS · CAPRIMULGIDAE

Nightjars

The ghosts of the African night — biology, behaviour, the moon, migration and conservation, with a field focus on Zimbabwe's seven species and Hwange National Park.

SERIES **SAFARI NOTES** FORMAT **FIELD & GUIDING NOTES** PUBLISHED BY **THE SAFARI SHOW**

> Nightjars are the birds guests most often hear and never identify. A guide who can name the "Good-Lord-deliver-us" of a Fiery-necked Nightjar at the boma, or pick out eyeshine on the road back to camp, turns an anonymous night sound into one of the most memorable stories of the trip.

AT A GLANCE Nightjars in sixty seconds

Family	Caprimulgidae — the only family left in the order Caprimulgiformes under current taxonomy.
Species	About 97–98 species in 22 genera (AviList 2025). The genus *Caprimulgus* alone holds about 39.
Range	Every continent except Antarctica, from sea level to about 4,200 m. Absent only from the most extreme deserts.
Lifestyle	Crepuscular and nocturnal aerial insectivores that hunt by sight — no echolocation.
Signature kit	Huge eyes with a reflective tapetum, a tiny bill over an enormous gape, rictal bristles, weak feet and a comb-like middle claw.
Nest	None. Usually two cryptic eggs laid on bare ground or leaf litter.
Other names	Goatsuckers, nighthawks (Americas), poorwills, whip-poor-wills, pauraques.
Zimbabwe	Seven species on the national checklist. Fiery-necked, Freckled, Square-tailed and Rufous-cheeked are the ones Hwange guides meet most.

01 What is a nightjar?

NAMES, MYTHS AND THE "GOATSUCKER"

The English word **nightjar** originally meant just one bird — the European Nightjar — and refers to the jarring, mechanical churr many species give at dusk. Some people link it instead to the bird's wide, jar-like mouth. In

the Americas, short-billed species without long bristles are called **nighthawks**, and others are named for their calls: poorwill, whip-poor-will, chuck-will's-widow.

The scientific name *Caprimulgus* comes from Latin *capra* (goat) and *mulgere* (to milk). It preserves an old European belief that the birds crept up on livestock at night to suckle milk. There is no truth in it: nightjars hang around animals because of the **insects that livestock attract**. Folklore elsewhere is just as colourful — in Malaysia the Large-tailed Nightjar is the "gravedigger bird" for its love of cemeteries, and the Hopi name for the Common Poorwill means "the sleeping one".

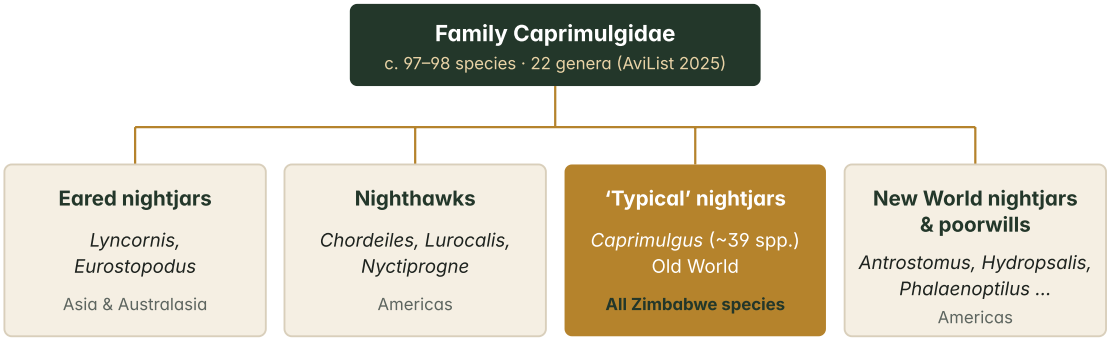
NEAREST RELATIVES

Nightjars sit in a larger group of mostly nocturnal birds (**Strisores**) alongside frogmouths, potoos, the Oilbird and owlet-nightjars — and, surprisingly, the **swifts and hummingbirds**. They are not close relatives of owls, despite the shared night shift.

02 Classification

ONE FAMILY, FOUR BROAD LINEAGES

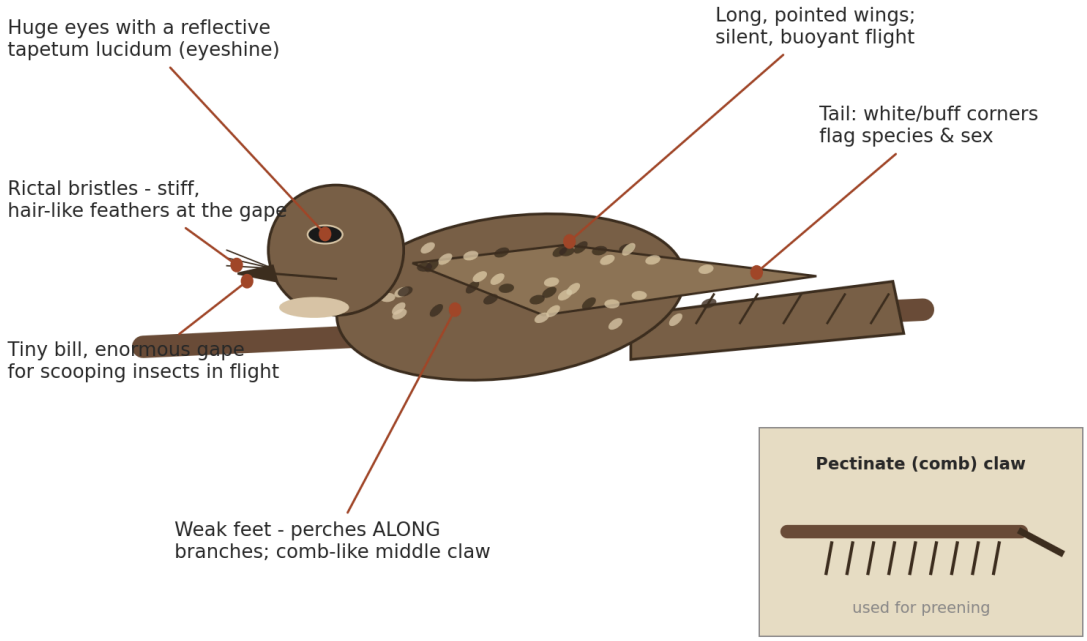
Nightjar classification has been rebuilt by DNA studies over the past fifteen years. Older books split the family into three subfamilies. The "eared nightjars" of Asia and Australasia were once lumped together, but *Eurostopodus* and *Lyncornis* turn out not to be closely related at all. Several new South American genera were described as recently as 2023. Treat species counts as approximate: different checklists give 70–98 depending on how they split species.



Simplified grouping of the family. All seven Zimbabwean species belong to the "typical" Old World nightjars (Pennant-winged was formerly placed in its own genus, Macrodipteryx, now usually merged into Caprimulgus).

03 Anatomy & adaptations

BUILT FOR THE DARK



Schematic nightjar showing the key adaptations (original illustration, not to scale).

EYES

Built-in reflectors

Proportionally huge and set to the side of the head. Behind the retina lies a **tapetum lucidum**, a reflective layer that bounces light back through the light-sensitive cells for a second pass. It makes a nightjar's eye glow orange-red in a spotlight — the single most useful field clue at night.

MOUTH

An aerial scoop

The bill is tiny but the gape opens enormously. The **Freckled Nightjar** has the biggest gape in the family and can swallow insects 3.5 cm long whole. Bill, tongue and crop are all reduced — prey is simply swallowed alive.

RICTAL BRISTLES

Shields and nets

Stiff, barbless feathers fringe the gape. In the Fiery-necked Nightjar they reach about 20 mm, up to eight per side. Research on African birds suggests a division of labour: the **upper bristles shield the eyes**, the **lower ones help catch prey**.

FEET & THE COMB

Weak feet, built-in comb

Short legs and weak feet are why nightjars rest **along** a branch rather than across it, and spend so much time on the ground. The middle toe carries a **pectinate claw**, a comb used for preening and possibly to clean the bristles and remove parasites. A Fiery-necked Nightjar's comb has about nine teeth; in Zimbabwean chicks it only begins to form around day 18–19.

Plumage. Every feather is a mix of greys, browns, buffs and black vermiculation that mimics bark and leaf litter. A roosting nightjar flattens itself, narrows its eyes to slits and trusts its camouflage, often until you are just **2–5 m away**. Flashes of white or buff in the wings and tail are hidden at rest and used for display — they are also the key to telling many species and sexes apart.

04 Feeding

HOW A NIGHTJAR HUNTS

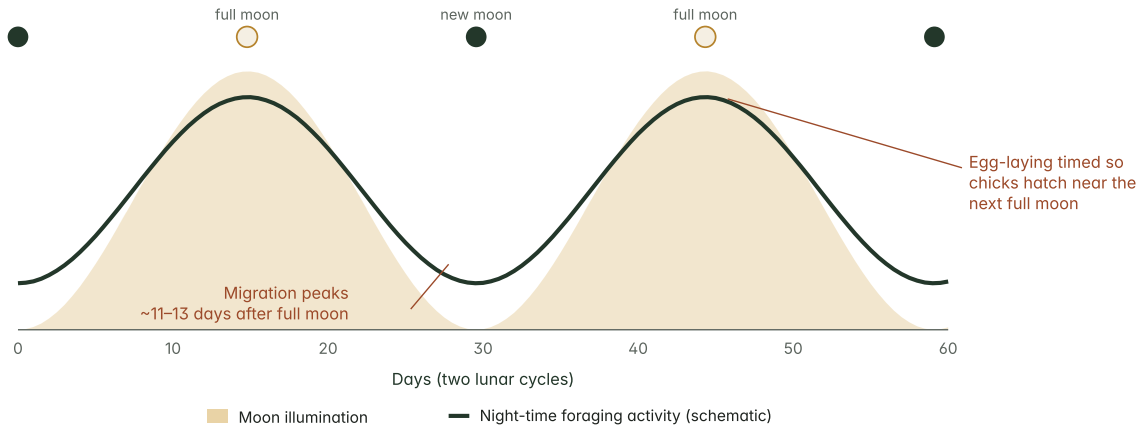
African nightjars feed almost entirely on **night-flying insects**, caught during twilight and moonlight. Lacking echolocation, they must see their prey — usually as a **silhouette against the brighter sky**.

- **Sallying from a perch** — the commonest method, used by every species at times. The bird watches from the ground, a road, a termite mound or a low branch and flies up to snap a single passing insect.
- **Sustained hawking** — some species make multiple captures in long, buoyant flights over open ground, water or around lights.
- **Diet is broad:** moths, beetles (Pennant-winged Nightjars favour scarabs), mantises, dragonflies, cockroaches, flies and flying termites.
- **Drinking on the wing:** many species drink in flight by dipping to a water surface — worth watching for at dusk over Hwange's pans.

05 Lunar rhythms

LIVING BY THE MOON

Because they hunt by sight, nightjars are ruled by moonlight to a degree few birds are. Data-logger studies of European Nightjars from Belgium, Sweden and Mongolia show flight activity **tracking the lunar cycle**, both on the breeding grounds and in Africa. Around new moon, birds largely stop foraging soon after dusk; around full moon they can hunt for much of the night.



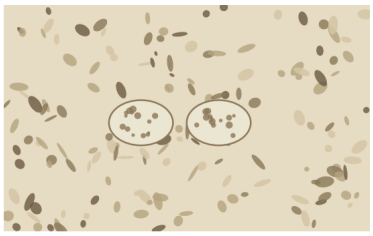
Schematic of the lunar pattern found in tracking studies. The activity curve is illustrative, not measured data.

- **Energy:** a ten-year study of Red-necked Nightjars in Spain (published 2026) estimated moonlit nights raise food intake by about **19%** in the breeding season, and found birds use energy-saving slow-downs on dark nights.
- **Migration:** European Nightjars migrate in pulses — occasionally the whole tracked group moves at once — with travel peaking about **11 days after full moon**. Red-necked Nightjars mostly left Africa about 13 days after full moon.
- **Breeding:** laying is timed so that, after an incubation of 16–19 days, chicks hatch near the **next full moon**, when parents can hunt longest. Similar lunar timing has been shown in Zimbabwe's Fiery-necked Nightjar and the Pennant-winged Nightjar.
- **The catch:** artificial light at night can scramble these cues — a growing conservation concern.

06 Breeding

TWO EGGS ON BARE GROUND

Nightjars build **no nest**. Most species lay one or two eggs directly on bare soil, gravel, rock or leaf litter, often beside a tuft of grass or under a bush. The eggs are cryptically blotched, and the incubating adult is even more motionless than usual. Most species are **monogamous**, and in several — including the Freckled Nightjar — pairs stay together over years.



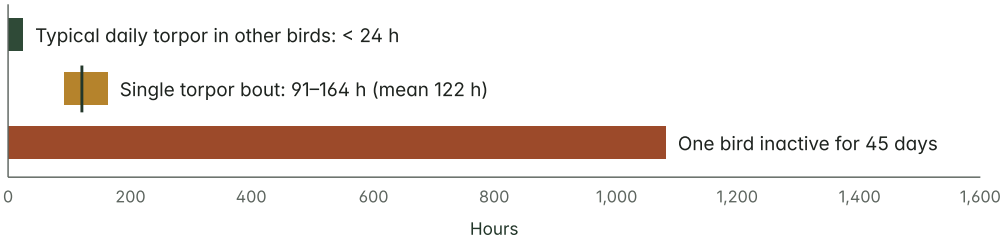
- **Distraction display:** if a predator comes close, the adult flops away with wings and tail spread — the classic "broken-wing" act — before flying off once the threat is drawn away.
- **Chicks are mobile:** Zimbabwean studies of Fiery-necked Nightjars found that chicks shuffle towards a calling parent rather than returning to the nest site to be fed.
- **Fair shares:** a chick grabs the adult's bill to trigger a feed; the parent waits for this cue, which helps each chick get its turn.
- **Shell removal varies:** two Fiery-necked subspecies carry eggshells away after hatching, while a third (*crepusculans*, eastern Zimbabwe) does not.

07 Torpor

THE BIRD THAT (ALMOST) HIBERNATES

To survive cold snaps when insects vanish, several nightjars can drop their body temperature and metabolism into **torpor**. The champion is North America's **Common Poorwill** — the only bird known to enter a state close to true hibernation. Edmund Jaeger made it famous in 1948 after finding one torpid in a rock crevice in California, though Meriwether Lewis had noted it in 1804 and the Hopi knew it long before.

COMMON POORWILL WINTER TORPOR, ARIZONA (WOODS, CZENZE & BRIGHAM 2019)

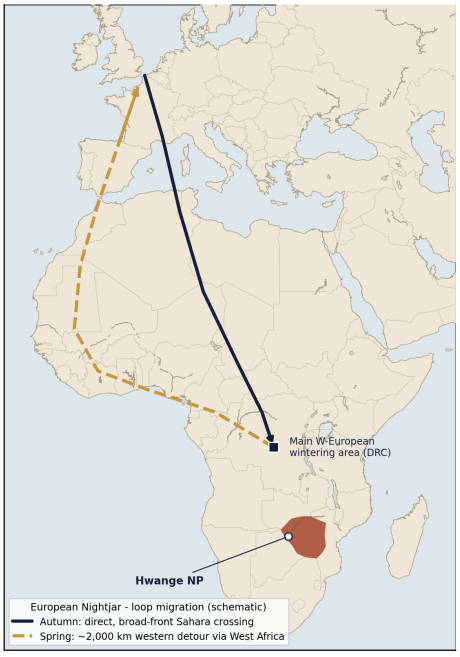


Experimentally shaded poorwills (so they could not warm up in the sun) stayed torpid for several days at a stretch.

Closer to home, the **Freckled Nightjar** — a familiar bird of Zimbabwe's granite kopjes — has also been shown to use torpor in the coldest, driest part of the year. It and the poorwill are the two most heterothermic species studied so far, and both live in arid habitats. **A cold July dawn** is the time to find one sitting unusually still on its rock.

08 Migration

JOURNEYS UNDER THE STARS



Route lines are schematic, simplified from published GPS and geolocator studies.

Northern species such as the European Nightjar and Common Nighthawk migrate south for the winter; others make shorter journeys within the tropics.

European Nightjar. GPS tags have transformed what we know. Western European birds fly a **loop**: a fairly direct crossing of the central Sahara in autumn, and a much longer route home in spring with a western detour of about **2,000 km** through West Africa. They make around nine stops on each leg, lasting 1–27 days, and individuals return to the same breeding and wintering sites year after year. Many western birds winter in small, discrete areas in the DRC, while populations further east reach southern Africa — including Zimbabwe.

Pennant-winged Nightjar. An intra-African migrant: it crosses the equator southwards to breed in the southern summer (roughly August/September–February) and spends the rest of the year in savanna between Nigeria and Sudan.

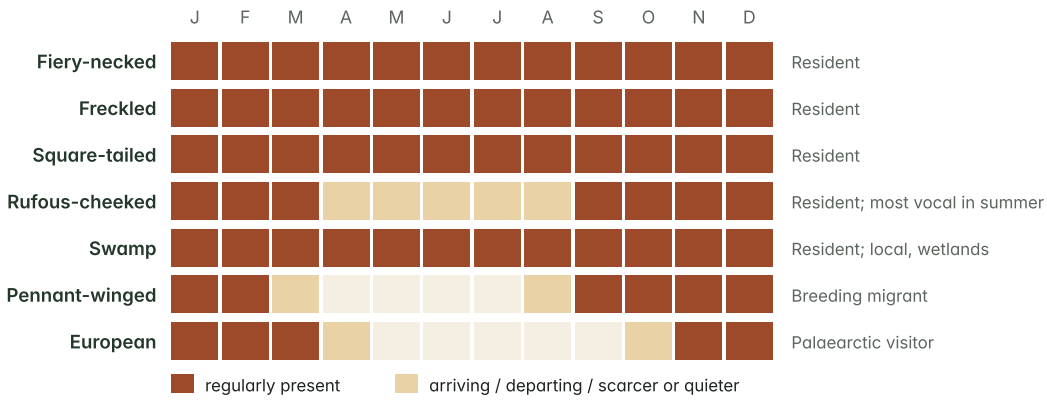
WATCH THIS SPACE

A recent modelling study using GPS data from 117 tagged European Nightjars warned that climate change and land-use change — especially in the Sahel — could make future migrations **more than 40% longer**.

09 Field guide

ZIMBABWE'S SEVEN NIGHTJARS

BirdLife Zimbabwe's national checklist includes seven species. Nightjars are notoriously hard to separate by sight, so for most of them **call is the best identification**. In the hand or in a spotlight, the pattern of white or buff in the wings and tail decides it.



When to expect each species in Zimbabwe. Indicative only — local timing varies with rains and year.

SPECIES	KEY FEATURES	VOICE	WHERE TO LOOK
Fiery-necked *C. pectoralis*	Rich rufous collar and face; dark-eyed, beautifully marked. Resident.	Descending, quavering whistle rendered "Good-Lord-deliver-us".	Woodland everywhere, incl. Hwange teak and miombo; often calls from camp trees.
Freckled *C. tristigma*	Large, dark, finely "freckled" grey-black — matches granite. Huge gape.	Yelping, dog-like double notes, e.g. "kow-kow".	Rocky outcrops and kopjes; Sinamatella area of Hwange.
Rufous-cheeked *C. rufigena*	Paler and greyer than Fiery-necked; weaker buff collar.	A very long, even churr (31–37 notes/sec) that slows at the end.	Dry, open woodland and Kalahari-sand scrub — typical Hwange habitat.
Square-tailed *C. fossii*	Bold pale spots on back; broad pale outer-tail panels (white in males, buff in females).	Extraordinarily long churr that switches between fast and slow about every second.	Sandy ground, often near water; river edges, vleis.
Swamp *C. natalensis*	Large white throat patch; male with extensive white outer tail.	Repetitive "chow-chow" / "bow-wow" notes, often from a mound or post.	Grassy floodplains and wetland margins; Zambezi valley, Victoria Falls area. Local.
Pennant-winged *C. vexillarius*	Breeding male unmistakable: white wing band and "pennants" up to twice body length.	High, insect-like twittering.	Miombo and stony hillsides; breeding visitor Sept–Feb.
European *C. europaeus*	Greyer, plainer, no rufous collar; often perches lengthwise on branches. Males have white wing and tail spots.	Classic long churr, but largely silent while in Africa.	Summer visitor from Europe/Asia, Nov–Mar; woodland roosts.

Voice descriptions are summaries; confirm with recordings (xeno-canto holds Hwange recordings, including a Freckled Nightjar at Sinamatella).

10 Guide's field notes

FINDING NIGHTJARS RESPONSIBLY

1. **Listen first.** Dusk and the hour before dawn are peak calling times; moonlit nights are busiest. Learn the four Hwange regulars (Fiery-necked, Freckled, Rufous-cheeked, Square-tailed) by ear before anything else.
2. **Scan for eyeshine.** On night drives a small, low, orange-red reflection on the road or track is almost always a nightjar.
3. **Mind the road.** Nightjars rest on warm roads at night, and road deaths are a major cause of mortality for the family. Slow down after dark — and brief drivers on transfers.
4. **Keep spotlighting short.** Hold the beam on a bird only briefly and off its eyes where possible; a dazzled bird is vulnerable.
5. **Go easy on playback.** A short burst can confirm an ID, but repeated playback stresses territorial birds, especially when breeding (Sept–Jan).

6 **Watch your step.** In the breeding season, eggs and chicks lie unprotected on bare ground — keep walking groups on paths near known sites.

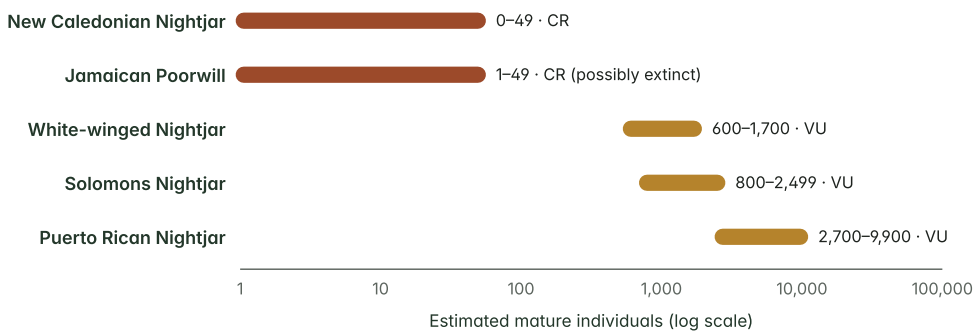
GUEST STORY TO TELL

"A nightjar's eye reflects light like a cat's. It can see you long before you see it — and its whole year is set by the moon."

11 Conservation

RARE, OVERLOOKED AND THREATENED

Most nightjars are listed as Least Concern, but the family is badly **under-studied**. For some species we simply don't have enough data to judge whether they are endangered, because they are so hard to find and identify. The rarest are island birds hit by habitat loss and introduced predators.



Population estimates for some of the most threatened species (IUCN figures; ranges reflect large uncertainty).

- **Jamaican Poorwill** — not reliably recorded since the 1800s; Critically Endangered (possibly extinct). Introduced rats and mongooses are the likely culprits.
- **Puerto Rican Nightjar** — known only from bones and a single specimen and thought extinct until rediscovered in 1961; it survives in dry forest in south-west Puerto Rico.
- **Swamp Nightjar** — Least Concern globally but assessed as regionally Vulnerable in South Africa because its wetland grasslands are shrinking.
- **Main threats:** habitat loss and degradation, road mortality, pesticides reducing insect prey, and light pollution.

THE MYSTERY OF THE NECHISAR NIGHTJAR

In 1990 researchers picked up a single, rotting wing from a road in Ethiopia's Nechisar National Park. It was described in 1995 as a new species, *Caprimulgus solala* — "only a wing" — and became one of the world's most sought-after birds. Possible sightings in 2009 were never confirmed, and a 2017 survey failed to find it. Then in 2025, DNA analysis suggested the wing came from a **hybrid of a Standard-winged and a Freckled Nightjar** — the first confirmed Old World nightjar hybrid. IUCN still lists it as Vulnerable pending formal review.

Key take-home points

- Nightjars (Caprimulgidae) are crepuscular and nocturnal insect-hunters that **hunt by sight**, not echolocation.
- Eyeshine from the **tapetum lucidum** is the best clue on a night drive.
- Their activity, migration and breeding are all **timed by the moon**.
- No nest — usually two cryptic eggs on bare ground.
- Zimbabwe has **seven species**; learn the four Hwange regulars by call.
- Slow down after dark — road deaths are a major threat.

SOURCES & FURTHER READING

- Wikipedia — Nightjar; European nightjar; Fiery-necked, Freckled, Rufous-cheeked, Pennant-winged, Square-tailed, Nechisar nightjar; Jamaican poorwill; List of Caprimulgiformes by population.
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- BirdLife International Data Zone — Nechisar Nightjar factsheet; Evens et al. (2017) Nightjar diversity in Nechisar NP. *Ostrich*.
- BirdLife South Africa Red List — Swamp Nightjar; BirdLife Zimbabwe national checklist; xeno-canto recordings (Hwange).
- Encyclopedia of Saskatchewan — Nightjars; Audubon/BirdNote — Common Poorwill torpor; Laura Erickson — Common Poorwill.

Note on accuracy: species counts, calendars and call transcriptions vary between authorities. Graphics marked "schematic" illustrate published patterns and are not plotted from raw data.

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