Gravel-downs ctenotus

Ctenotus serotinus

Critically Endangered[#] (*Nature Conservation Act 1992*) | Ecological Sciences, Queensland Herbarium

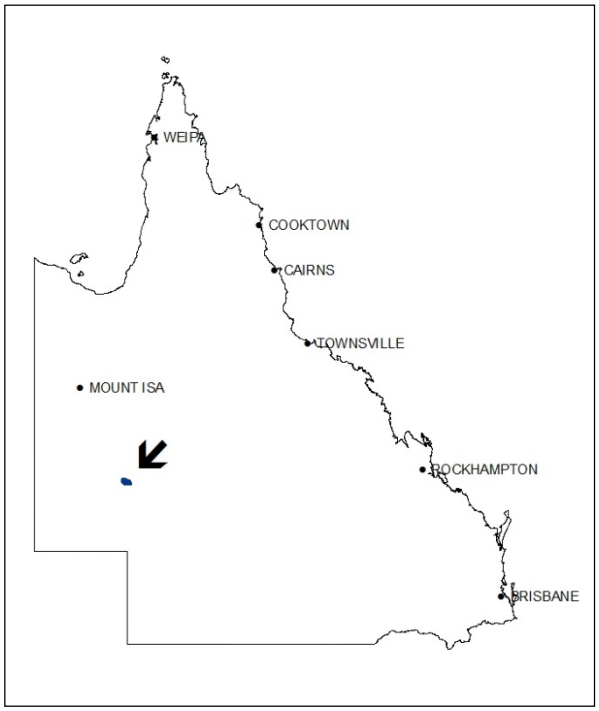
Identification

A moderately small ctenotus (SVL 50mm) with a distinct pattern dominated by pale spots. Base colour is olive brown. A narrow, dark brown-to-black vertebral stripe with a pale irregular edge runs from the nape to the base of the tail. Upper flanks are dark olive brown with small white spots, which tend to align vertically on the flanks. Grey mid-lateral stripe runs from behind the eye to the tail, but is poorly defined, especially near the head. Obscure dark and light brown stripes on the limbs. Markings are more prominent in juveniles (Czechura 1986; Wilson and Knowles 1988; Wilson and Swan 2003; Wilson 2015).

Ctenotus serotinus may be sympatric with at least ten other species of ctenotus in the Channel Country (stony downs ctenotus *C. astarte,* wedgesnout ctenotus *C. brooksi,* black-soil ctenotus *C. joanae,* gravelly-soil ctenotus *C. lateralis*, Leonhard's ctenotus *C. leonhardii*, leopard ctenotus *C. pantherinus*, red-sided ctenotus *C. pulchellus*, barred wedgesnout ctenotus *C. schomburgkii,* massive-gibber ctenotus *C. septenarius* and eastern barred wedgesnout ctenotus *C. strauchii*) (Wilson 2005). While many ctenotus species can look superficially similar, it is distinguished from these species (as well as the closely related black-soil rises ctenotus *C. schevilli*) by its smaller size (SVL 50 vs >70 mm for all but *C. brooksi* and *C. strauchii*) and stronger development of vertebral and paravertebral stripes (for all but *C. leonhardii* and *C. pulchellus*).

Distribution

Ctenotus serotinus is a Queensland endemic, only known from two sites in the Diamantina Lakes district in far south-western Queensland (Wilson and Knowles 1988). The known sites are approximately 300 km south-west of Winton, in Diamantina NP and in an adjacent leasehold property.



[#] Conservation status updated from Vulnerable to Critically Endangered in 2020

Habitat

Ctenotus serotinus habitat is the interface and adjacent areas between stony or gravelly downs (with gentle slopes or rises) and fine-grained soils (sand dunes or hills) (Czechura 1986; Wilson and Knowles 1988; Ehmann 1992). Greg Czechura (pers.comm. 2012) confirms that this skink, which was noticeably different in appearance to other ctenotus species in the region, was only seen and captured in the ecotone of stony areas and sand dunes, and that the habitat occurred only as a “very narrow” band. David Knowles (pers. comm. 2012) noted that the habitat of the holotype was lacking the spinifex (*Triodia* spp.) shelter sites that are commonly used by many species of ctenotus in the region. By contrast, habitat for the paratype specimen was recorded as “dunefield and spinifex/sandhill canegrass and interdune low open Georgina gidgee woodland” (Atherton et al. unpubl.; WildNet 2015).

Potential habitat may be Regional Ecosystems 4.9.4, 5.9.3, 5.6.1 and 5.6.8, based on intersections of (imprecise) historical records and RE mapping (WildNet database 2015; Qld Herbarium 2015).

Seasonal and timing considerations

Ctenotus are known to be spring-summer breeders (James 1991); although the existing records of this species were taken in December and May (WildNet database 2015).

Surveys should be carried out during cooler months (April to September) of the year, and are best conducted on dry days within the survey period.

Recommended survey approach

Because *C. serotinus* is sympatric with a number of other species of ctenotus in the Channel Country (see Identification) and has not been recorded for over two decades, we recommend capturing individuals for definitive identification. Although highly experienced observers may be able to identify *C. serotinus* without capture (provided they get a reasonable sighting), taking a voucher specimen or genetic sample (both subject to permit requirements) or at least a series of detailed photographs is preferred.

Indirect signs such as burrows and tracks may also help to target further trapping or active searching effort, and may be important for identifying where reptile activity is occurring, especially if reptile activity is patchy. Of course, *C. serotinus* may avoid or be competitively excluded by other ctenotus/ reptiles; so targeting areas of low activity is also important (G. Czechura pers. comm. 2015).

Active diurnal searches can achieve greater coverage within project areas and therefore should be the primary survey approach in targeted surveys for this species. If the active searching does not detect the species in suitable habitat, then the secondary methods (pitfall/funnel trapping) can be employed.

Active searching

Active searches can be conducted in a range of habitats, particularly the ecotone between gravelly downs and sand dunes. Before commencing active searching, scan the area using binoculars for active or basking individuals. During searches, pay special attention to searching under woody debris, leaf litter or other vegetation on the soil surface; looking for individuals and evidence of shallow burrows. Under optimal conditions, searches are best conducted in the morning when individuals are likely to be basking and starting to become active; but before it heats up too much. However keep in mind that the optimal time of day (and day within the survey period), to conduct active diurnal searches depends heavily on season and weather conditions on adjacent days. Since we know very little about this species, it may also be possible that it prefers the hotter part of the day; it may be worth spreading some of the search effort across the day (G. Czechura pers. comm. 2015).

Excavating burrows

Ctenotus serotinus is assumed to shelter in shallow burrows in soil/sand under vegetation or woody debris (Wilson and Knowles 1988). Ctenotus burrows tend to have flat-bottomed entrances with curved roof to the tunnel. It may be worth excavating an active burrow (shown by a spray of fresh sand) if no ctenotus have been identified/captured using other methods. Slide something long and flexible (e.g. plastic packing tape) carefully down the burrow, keeping in mind that tunnels can abruptly change direction. Carefully clear away the sand/soil working along the tape from the entrance. Alternatively target the area around fresh ctenotus diggings with funnel traps (with or without drift fence).

Pitfall and funnel trapping

Pitfall arrays, in combination with drift fence and funnel traps, can be placed in suitable habitat, particularly in close proximity to where burrow systems have been identified. Funnel traps can also be used with or without drift fence near burrows.

Survey effort guide

With very few *C. serotinus* ever seen or caught (and none since the mid-1980s) (WildNet 2015), there is no information available on detection rates for the species. However, the recommended level of effort below may provide a reasonable opportunity to detect *C. serotinus* if present in the project area.

Minimum effort per 50 ha of suitable habitat during optimal conditions			
Survey technique	**Effort per survey period**	**Effort per survey**	**Number of survey periods**
Active diurnal searches (50 m x 50 m plot)	60 minutes searching per plot 4 plots per 50 ha (= 240 min per 50 ha) (or 1 plot per 5 ha if survey area is less than 50 ha)	Two 30 person-minute searches per plot	2 surveys
Funnel traps	1 plot per 50 ha (or 1 plot per 10 ha if survey area ≤ 50 ha) 24 funnel trap nights	4 nights	2 surveys
Pitfall traps	1 plot per 50 ha (or 1 plot per 10 ha if survey area ≤ 50 ha) 16 pitfall trap nights	4 nights	2 surveys
e.g. Active searches: 4 plots per 50 ha, with 2 searches of 30 person-minutes per survey site within the survey period. Trapping: 1 plot per 50 ha, with 4 pit traps and 6 funnel traps set for 4 consecutive nights per survey.			

Ethical and handling considerations

Active Searching

- During active searches, always replace habitat to the best of your ability, such as re-rolling logs and rocks back into place or raking leaf litter back over the soil surface.
- If you are working in a fragile or highly restricted environment (e.g. the narrow ecotones of *C. serotinus*), make every attempt to keep damage from actively searching to a minimum.
- Any captured animals not being held as voucher specimens should be released at the site of capture as soon as possible after identification.

Trapping

- Traps must be thoroughly checked early in the morning before temperatures become too hot.
- Provide shelter to reduce predation and exposure (heat, cold and dehydration) of trapped animals. Place shelter in the bottom of buckets. For funnel traps, we recommend at least 70% shade-cloth covering funnels; however silver roof insulation or dense vegetation are alternatives.
- Floats should be added to the bottom of buckets (e.g. piece of closed cell foam or cork) to reduce the risk of drowning from unexpected rain or storms. Buckets must be closed if they begin to fill with water and should not be reopened until the risk of drowning has passed.
- Ant predation can be a problem so locate pitfall traps away from obvious ant nests and be vigilant for ant activity. If ants are found attacking captured animals and cannot be controlled using low toxicity insecticides, close traps immediately.
- Take care when checking funnel traps as they may trap venomous animals; personnel should be trained in the removal of venomous snakes.
- Consider weed and pathogen spread when using equipment in multiple locations as these can be transported via dirty equipment e.g. weed seeds in funnel traps.

Acknowledgements

These guidelines were prepared by Melanie Venz in May 2015. Advice and comments on drafts for *Ctenotus serotinus* were provided by Greg Czechura.

Citation

Venz, M. 2015. Gravel-downs ctenotus *Ctenotus serotinus*. Targeted species survey guidelines. Queensland Herbarium, Department of Environment and Science, Brisbane.

Key references

Atherton, R. G., Gordon, G., Porter, G. and Reimer, D. S. (1982). 'Fauna Survey of the Diamantina Shire, Queensland'. Unpublished report to Queensland National Parks and Wildlife Service.

Czechura, G.V. (1986). Skinks of the *Ctenotus schevilli* group. *Memoirs of the Queensland Museum*. 22: 289-297.

Ehmann, H. (1992). 'Encyclopedia of Australian Animals Reptiles'. Collins Angus and Robertson, Pymble.

James, C. D. (1991). Annual variation in reproductive cycles of scincid lizards (*Ctenotus*) in central Australia. *Copeia*, 744-760.

Queensland Herbarium (2015) Regional Ecosystem Description Database (REDD). Version 9.0 (April 2015) DSITI, Brisbane.

WildNet Database (2015). Oracle database of wildlife and reserve information managed by Department of Science, Information Technology and Innovation (DSITI).

Wilson, S. (2015). 'A Field Guide to Reptiles of Queensland' 2nd Edition. Reed New Holland, Frenchs Forest.

Wilson, S. and Swan, G. (2003). 'A Complete Guide to the Reptiles of Australia. Reed New Holland, Chatswood.

Wilson, S. and Knowles, D. (1988). 'Australia's Reptiles: A Photographic Reference to the Terrestrial Reptiles of Australia'. Collins Angus, and Robertson, Pymble.