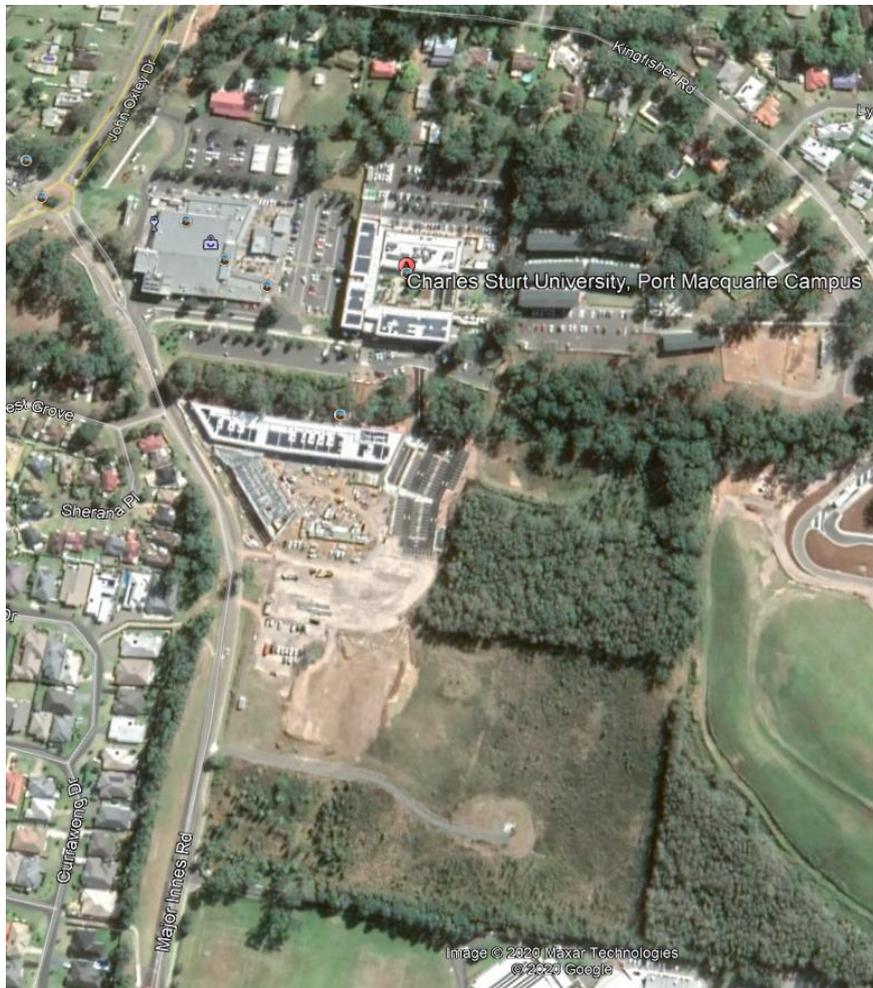


Hastings Birdwatchers' Surveys at Charles Sturt University Port Macquarie Campus



Swift Parrot – Critically Endangered



Square-tailed Kite – Vulnerable NSW

Background to the Surveys

In recent years Hastings Birdwatchers (HBW) has been participating in a National, bi-annual search for the critically endangered Swift Parrot, which breeds in Tasmania and migrates to the east coast of Australia in April/May each year. Although there are only approximately 4,000 of these birds left in the wild, Port Macquarie has recorded isolated sightings stretching back many years.

On the 4th May 2018 Liam Murphy, a CSU student and member of Hastings Birdwatchers, identified and photographed at least 18 of the birds in a strip of heavily blossomed and lerp infested Forest Redgum and Swamp Mahogany. This strip is approximately 25 metres wide by 200 metres long and lies between a carpark and the new CSU extensions. It is recorded on the University Vegetation Management Plan as 0.51 ha of 'Bush Regeneration'. Following that initial sighting, the birds were regularly recorded in the trees by our club members over the following 7 weeks with the maximum single sighting being 28. In 2019 Swift Parrots were again sighted at the same location but less frequently and in smaller numbers. However, club members had noted that the blossoming was not as heavy and the presence of lerps not as prolific as was the case in the previous year.

In 2019 the University commenced a major building expansion on land bordering the 0.51 ha bush regeneration strip identified above. A few of the Swamp Mahogany were removed but most of the trees were untouched. However, our club still held concerns for the survival of the remaining trees arising from the continual growth of the University, including the need to provide traffic and pedestrian access and the installation of utilities. A sewerage line is to be run along the side of a section of this land that will, of necessity, remove some small regeneration plantings and may disturb the roots of the key Forest Redgums.

With the knowledge that some trees have been removed and concern for potential future disturbance, Sue Proust, our Environmental Coordinator at the time (now Club President), made approaches to the University requesting the protection of the remaining identified Swift Parrot feed trees. The University was receptive to our club's concerns and asked us for relevant data and photographs which we provided. Through discussions with the club, they indicated that they would welcome ongoing surveys, not only for the Parrots, but also for other bird species. In fact our surveys were seen as being compatible with, and helpful to, their own biodiversity monitoring. Kym Witney-Soanes, Project Sustainability Officer, CSU Green Division, across all CSU campuses, informed us that she is "building a body of biodiversity evidence, particularly on threatened flora and fauna, across our university footprint"

As a result of all the above, the Hastings Birdwatchers' Management Committee endorsed conducting regular surveys of the University campus, principally, but not exclusively, for Swift Parrots. The agreement was that our club would conduct bird surveys for a fixed period (June to early Sept), coinciding with our Swift Parrot and Regent Honeyeater Survey goals. At the conclusion of this reasonably intense and compressed survey activity it is hoped that our club will have helped to establish a 'baseline-profile' of campus bird species. In discussions with the University, we will then be in a better position to review the nature of any longer term arrangements between the club and the university.

Completion of Surveys

Thirteen club members have participated in 30 surveys over 13 weeks from June 1st to Sept 3rd. Attachment 2 provides the Birdata ID No. for each survey, its date, the number of surveyors, and the location code for which section of CSU was surveyed.

Survey Methods

The dominant survey technique employed throughout the campus was the establishment of 3 small teams, adopting the 500 metre area search. However there were a number of occasions where this was supplemented by 2ha, 20 minute searches. The total area covered included the whole of the built campus environment and, from the 29th of July, extended to include the 3.52 ha offset conservation block adjoining the campus at its south east boundary.



Wooded Conservation Block. Photo supplied by Terry McCarthy.

This latter well wooded area contributes to a valuable habitat corridor between the main university campus and the Lake Innes/ Kooloonbung Creek Nature Reserve. The location falls within the Hastings-Macleay Key Biodiversity Area, proclaimed by Birdlife International as one of “Nature’s Biodiversity Hotspots.”

Recording of Surveys

Commencing June 1st all HBW’s on site surveys have been recorded on Birdata.

Survey Results

Unfortunately no Swift Parrots were sighted during the survey activity. However this is consistent with findings elsewhere. National databases and leading information networks all confirm that there have been no large flocks and very few sightings in NSW, particularly north of the Hunter, over the May to August 2020 migration period. The construction disturbance at the University, adjacent to the 0.51ha Bush Regeneration area, may have also played a part in dissuading any isolated travellers from returning to the known feed trees.

However, the critically endangered Swift Parrots had been recorded many times previously, particularly over 2018-19, and the Square-tailed Kite, listed as vulnerable in NSW, was also recorded at the campus, two months prior to the commencement of our current undertaking (see below, under Pre-June 1st Sightings).

Although our current winter surveys did not record either of the above two species they were successful in identifying an interesting mix of 72 species in the campus precinct.

Attachment 1 provides :

- a list of all species identified
- the number of surveys in which each of the species were sighted
- the maximum number of birds recorded, of each individual species, in any one survey count
- the total number of the birds, within each species, across all 30 surveys
- the total number of birds across all species counted in all surveys

Pre June 1st 2020 Campus Sightings

In addition to the block of 30 surveys recorded during our current winter surveys, there have been previous 'one-off' surveys, conducted on campus, and recorded on Birdata. The records below show a selection of those surveys conducted over the previous two years in which additional species, not picked up in this current 3 month survey project, were identified.

- 04/5/2018, Birdata ID No.2031848. 18 Swift Parrots (sighted by 14 members of HBW)
- 13/5/2018, Birdata ID No.2032679. White-bellied Sea Eagle, Peregrine Falcon
- 22/8/2018, Birdata ID No.2383712. Musk Lorikeets, Little Friarbird
- 6/4/2020, Birdata ID No.3116133. Square-tailed Kite.

I recommend that CSU include these additional 6 species, identified within the last 2 years, bringing the current bird tally to 78 species as recorded on Birdata.

Discussion of Survey Findings

Of the 78 species identified I would classify 23 of the species as small bush birds. However, more than half of these species were sighted in only one or 2 of the 30 surveys. Only 2 of the small bird species were sighted in more than 10 surveys. They were Lewin's Honeyeater (16 surveys) and the Grey Fantail (14 surveys). From there it drops off rapidly.

Similarly, the bird count (abundance figures) attributed to the 23 species of small bush birds was also very low. Although Lewin's Honeyeater was recorded during 16 surveys, the maximum number of birds sighted at any one survey was 7 and the total number of Lewin's Honeyeater was 45. For the Grey Fantail the maximum number of birds was 5 in any one of its 14 survey sightings and the total sightings was 31 birds. The highest *single survey* abundance count of any of the small bush birds was 8 Red-browed finches. The comparison with groupings of larger birds warrants comment. For example:

- Rainbow Lorikeet, seen in all 30 surveys, largest single sighting being 43 birds and the total number of these birds counted, over the 30 surveys, was 740
- Galah, 28 surveys, largest sighting 23 birds, total number 218
- Noisy Miner, 23 surveys, largest sighting 18 birds, total number 212
- Scaly-breasted Lorikeet, 25 surveys, largest sighting 14 birds, total number 160
- Aust. Magpie, 28 surveys, largest sighting 11 birds, total number 118
- Laughing Kookaburra, 26 surveys, largest sighting 7 birds, total number 78

There can be many factors at play to explain this imbalance, and equally as many theories as, to why the small bush birds were sighted far less frequently and in far fewer numbers than most of the larger bird groupings. The exception being the Raptors where of the 8 species sighted, all single bird sightings, only the Nankeen Kestrel was sighted in more than one survey (3 sightings).

Predation is highly likely to be a contributing factor to the dearth of small birds. The substantially cleared understory reduces favourable and safe nesting habitat. It also reduces opportunity for concealment and escape, giving advantage to the predators. A large, resident family of Kookaburras (themselves nesting on campus) were recorded in 28 of our 30 surveys and both Pied and Grey Butcherbirds were also recorded in half or more of the surveys. The territory these three species dominate is the open woodland, with cleared understory, in front of the student accommodation and bordering the conservation block. Small birds entering the campus from the conservation block or from the Nature Reserve would have to run the gauntlet past this welcoming committee. Apart from a couple of high canopy honeyeaters the small birds that were seen on the developed campus grounds were predominantly located on the border of the conservation block.

There were also a number of species, identified only in the more densely vegetated conservation woodland, that are yet to be recorded within the wider campus grounds. They include the Yellow Thornbill, White-browed Scrub Wren, Large-billed Scrub Wren, Fantail Cuckoo, Brown Gerygone, Rufous Whistler and Olive-backed Oriole.

HBW is aware that much of the cleared understory is likely to be a result of complying with requirements of Asset Protection Zones. However, there may be opportunity, even within those restrictions, to examine plant choice and possible location that could provide small, low and densely vegetated, 'islands' where the small birds that do venture into the cleared woodland, could escape.

Apart from the variety among the 78 species there have been a number of interesting observations.

One of the most obvious has being the number of species occupying the site's many tree hollows. Those species include the Long-billed and Little Corellas, Rainbow and Scaly-breasted Lorikeets, Galahs, Kookaburras and Australian King Parrot. It was also a surprise for one of our survey teams to observe a pair of Spotted Pardalotes entering a small hole in a Paperbark (*Melaleuca linarifolia*) very much with the appearance that they were nesting. Although there are records of these birds nesting in tree hollows it is uncommon and it is a sight members would rarely witness.

The Long-billed Corellas were an interesting find. Although members have intermittently sighted these birds in our area, and old Birdata records also include them around the campus location, Birdata itself still lists Port Macquarie as being outside the bird's normal range.



Long-billed Corella
Photo supplied by Ian Kerr



Red-winged Parrot
Photo supplied by Roger Fance

Similarly the sighting and photographing of the Red-winged Parrot is a most unusual bonus as most field guides limit this species range in NSW as 'West of the Divide'. Whereas it may be tempting to explain this sighting as a likely 'aviary escapee', this is now our club's 3rd confirmed record of the species in our patch since 2008¹. Climatic conditions may be contributing to the bird extending its range to coastal areas as is the case in Queensland. Another unusual observation has been that of a Galah/Long-billed Corella Hybrid.



Galah/Long-billed Corella Hybrid



Photos supplied by Ken Monson

During the course of the 30 surveys members also sighted other forms of biodiversity. It was pleasing to have three Koala sightings (in separate campus locations), regular sightings of Kangaroo, possum dreys and butterflies.

¹ Red-winged Parrot sightings.

1st November 2008 Sighted and photographed by club members Jan and Bryce Taylor at their home in Port Macquarie.

3rd August 2012 Sighted and recorded at Limeburner Hill, Crescent Head/Point Plomer during HBW club field trip.

27th July 2020 Sighted and photographed at CSU Port Macquarie campus by club member Roger Fance



Koala sighting. Photo supplied by Ken Monson

The extent and variety of the campus habitat, including its 3.5 hectare, partly wooded conservation area, together with its proximity to the Lake Innes Nature Reserve, suggests that there are likely to be many species visiting the campus which we have yet to sight. There is reason for optimism that future surveys will pick up more species particularly as Port Macquarie is ideally geographically located to benefit from both northerly and southerly migration patterns throughout all seasons.

It is hoped that our findings add to the University's biodiversity footprint and contribute to your 'Bush Regeneration' and site restoration plantings. The University may find the material helpful in the promotion of their campus. Our surveyors regularly heard and sighted birds that provide the unique sounds of the Australian Bush such as the Laughing Kookaburra, Australian Magpie, Pied Currawong, Grey and Pied Butcherbirds, and the Golden and Rufous Whistlers. The sightings also include some of the very colourful Australian birds such as the Eastern Rosellas, Australian King Parrots, Rainbow and Scaly-breasted Lorikeets, Galahs, Scarlet Honeyeaters, Superb and Variegated Fairy-wrens, Spotted Pardalotes, Eastern Spinebills, Yellow Thornbills, Satin Bowerbirds and many others. A large number of these species can be sighted from the on-campus student accommodation.

Vegetation Management Plan

As part of CSU's Bush Regeneration and site restoration planting, Nigel Urwin has sought advice from HBW as to plantings that could both protect and improve avian biodiversity on campus.

Our club does have some useful in-house knowledge and three members have agreed to co-ordinate the club's response. They will also draw on lists provided by Council that identify plants suitable for specific habitats, some of which may be available through Landcare.

In shaping our input we have identified 5 issues we believe to be relevant when choosing planting requirements with view to protecting and improving avian biodiversity at CSU.

1. Strengthen the habitat corridor between the Lake Innes Nature Reserve and the university campus

Just over 40% of the university's 3.52 conservation block is yet to be rehabilitated and is devoid of natural vegetation, having being stripped many years ago. A section of this area is being used for earthworks and parking during the construction of the new extensions. Given that this area is included in CSU's offset conservation block, it requires rehabilitation once construction is stopped. Although CSU has commenced some limited plantings along the northern edge of this area, and there are also signs of some struggling natural regeneration, overall *it is barren and*

severs the natural corridor between the Lake Innes Nature Reserve and the university. However, although this barren area is only approximately 1.5 ha, it is a strategically valuable location. With appropriate planting it could be transformed to provide a much improved wildlife corridor link between the Reserve, the existing wooded conservation block and CSU's landscaped campus. The university may also wish to engage an engineering assessment to determine whether there is possibility of capitalising on the wetland nature of its eastern boundary to create a small artificial wetland. We understand there has already been some contouring in this area to manage water run off arising from the new extensions (see section 5, below).

2. *The matching of plantings with feed, nesting and protection requirements for groupings of avian species*

Whether it is tall canopy trees, shrubs or thick undergrowth HBW will attempt to identify lists of plants that provide the requirements for a cross-section of known resident species, as well as potentially attracting other absent and migratory species. Although there is considerable overlap within the term '*groupings of avian species*' we are referring to groups of birds that are mainly attracted to similar food preferences hence have similar, and sometimes specific, known habitat requirements. For example,

Berry Eaters: Bowerbirds, Figbirds, Orioles, Native Pigeons and Doves.

Nectar Lovers: Spinebills, Honeyeaters, Lorikeets, Swift Parrots, Wattlebirds. Note, nectar plants also attract insects.

Insect Eaters: All trees and shrubs attract insects. However, those that regularly provide soft new growth, are heavily laden with nectar blossoms, or possess rough, flaking bark are particularly appreciated by the insect eaters such as Whistlers, Robins, Pardalotes, Treecreepers, Fantails, Wagtails, Fairy Wrens, Scrub Wrens, Drongos, Wattlebirds, Cuckoos, Swallows, Martins. Undisturbed woodland floor also provides abundant insects for ground dwellers or feeders.

Seed Eaters: Parrots, Galahs, Cockatoos, Corellas, Finches.

Wetland vegetation, including invertebrates: Herons, Ibis, Egrets, Spoonbills, Ducks, Crakes, Rail, Native Hens.

3. *Restoration of undergrowth*

The university has retained many mature trees in key locations such as in front of and behind the student accommodation. However, with the exception of the fenced section of the 3.52ha conservation area and the 0.51ha bush regeneration area, almost all under story has been removed. This not only removes small bird nesting habitat but also leaves the birds vulnerable to predation. Small birds that venture from the protection of the more densely vegetated conservation area, or the adjoining Lake Innes Nature Reserve, are now increasingly exposed to predation.

Recommendations

- That any understory plantings in the 0.51 ha bush regeneration area, that are removed during the laying of sewerage lines, be replaced.
- Subject to complying with the limitations of Asset Protection Zones, that a number of islands or plots of understory shrubs and grasses be established within the treed areas both in front of (south) and behind (north) the student accommodation.

4. Replacement of cornerstone eucalypts

It is the Swamp Mahoganys and Forrest Redgums that have been attracting the critically endangered Swift Parrots to the CSU campus. These vital but limited eucalypts are increasingly vulnerable to development, not only at the CSU campus but throughout the Swift Parrot's mainland range.

As the Swamp Mahoganys are also Koala preferred habitat it is hoped that priority attention can be given to protecting the remaining campus trees and finding suitable locations on university owned land for new plantings of clusters of both species.

5. Consideration of an artificial wetland associated with the 3.52ha conservation block

The lower eastern edge of the cleared land to the south of the existing fenced wooded conservation block can be very wet. That area also links to a wet gully running along its lower eastern side and the old dump-site hill. It is recommended that CSU seek the opinion of professional wetland engineers to determine whether minor site works could establish an artificial wetland. Such areas can attract a large number of waterfowl and waders such as many species of duck, grebes, heron, egrets, spoonbills and ibis. They also attract crakes, rails, native hens, reed-warblers and raptors.

Future Surveys

Recommendations from members of the survey teams for follow-up seasonal surveys were endorsed by HBW's Management Committee on September 25th. The preferred options will be discussed with the University as early as can be arranged.

Night Surveys

Provided we adhere to some advance notification protocols, we have received permission to conduct night surveys. Based on the extent of tree hollows available in both the built campus area and in the offset conservation block, it is anticipated that such surveys are likely to identify several species of owl.

Thanks

I would like to thank the following club members for their commitment to the survey effort.

Peter West, Sue Proust, Ian Kerr, Ted Giblin, Les Mitchell, Terry McCarthy, Jenny Lester, Alan Morris, Clive Meadows, Roger Fance, and Beryl and Roy Aylett. Also thanks to Chris Nixon for the valuable help he provided.

I would also like to thank Port Macquarie CSU's Dr Nigel Urwin, for his initiative and support and Kym Witney-Soanes, Sustainability Project Officer, CSU Wagga Wagga, for her encouragement and feed-back.

Ken Monson - Survey Coordinator and participant. 25th Sept 2020

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Attachment 1

Survey Data

Species	Number of Survey Sightings	Maximum count	Total Count
Australasian Figbird	1	2	2
Australian Hobby*	1	1	1
Australian King Parrot	5	4	12
Australian Magpie	28	11	118
Australian Pelican (Overhead)	4	5	9
Australian White Ibis	2	2	3
Australian Woodduck	3	3	5
Black Kite	1	1	1
Black-faced Cuckoo-shrike	5	2	6
Brown Gerygone	1	1	1
Brown Thornbill	9	3	19
Common Mynah	1	2	2
Common Starling	1	1	1
Crested Pidgeon	17	5	40
Eastern Rosella	9	3	17
Eastern Spinebill	2	1	2
Eastern Yellow Robin	1	1	1
Fantailed Cuckoo	1	1	1
Forest Raven	3	3	5
Galah	28	23	218
Golden Whistler	4	2	5
Grey Butcherbird	16	2	19
Grey Fantail	14	5	31
Grey Goshawk	1	1	1
Hybrid Long-billed Corella/Galah*	1	1	1
Large-billed Scrubwren	1	2	2
Laughing Kookaburra	26	7	78
Lewin's Honeyeater	16	7	45
Little Corella	15	8	54
Little Wattlebird	6	2	11
Long-billed Corella	11	2	19
Magpie Lark	2	2	3
Masked Lapwing	13	5	24
Mistletoebird	1	1	1
Nankeen Kestrel	3	1	3
Noisy Friarbird	6	2	8
Noisy Miner	23	18	212
Olive-backed Oriole	6	2	7
Pied Butcherbird	15	2	23
Pied Currawong	2	2	3
Rainbow Lorikeet	30	43	740

Red Wattlebird	5	2	6
Red-browed Finch	4	8	18
Red-winged Parrot*	1	1	1
Rock Dove	1	1	1
Rufous Whistler	8	2	11
Satin Bowerbird	2	1	2
Scaly-breasted Lorikeet	25	14	160
Scarlet Honeyeater	3	6	13
Silvereye	2	2	4
Spangled Drongo	10	2	14
Spotted Dove	13	2	17
Spotted Pardalote	8	3	13
Straw-necked Ibis	7	13	43
Striated Pardalote	1	1	1
Striped Honeyeater	1	1	1
Sulphur-crested Cockatoo	1	2	2
Superb Fairy Wren	6	5	18
Tawny Frogmouth*	1	1	1
Torresian Crow	17	9	53
Tree Martin	10	4	20
Variiegated Fairy Wren	5	5	15
Welcome Swallow	19	8	67
Whistling Kite	1	1	1
White-browed Scrubwren	2	4	6
White-faced Heron	1	1	1
White-headed Pidgeon	5	3	10
White-throated Treecreeper	1	1	1
Willie Wagtail	9	3	16
Yellow Thornbill	2	4	5
Yellow-faced Honeyeater	7	2	9
Yellow-tailed Black Cockatoo	1	5	5
Total	514	N/A	2289

*Incidental sightings on survey days, but falling outside the survey time frame. In addition there were 4 separate sightings of the Corella/Galah Hybrid outside of survey activity. These observations were conducted with the view to getting evidence to assist determining whether the bird was a Long-billed or Little Corella cross with a Galah.

Attachment 2

Record of Survey Activity

Date	Birddata ID No	Survey Type	No. of Surveyors	Location Code
1/6/20	3144841	20 min, 200 metre	3	1
11/6/20	3150233	500m Area Search	3	2
18/6/20	3152196	500m Area Search	5	2
18/6/20	3152081	20 min, 200 metre	5	2
24/6/20	3158017	500m Area Search	3	2
25/6/20	3157939	500m Area Search	3	2
27/6/20	3158724	500m Area Search	1	2
1/7/20	3160084	500m Area Search	2	2
2/7/20	3160517	500m Area Search	2	2
7/7/20	3161396	500m Area Search	2	2
9/7/20	3163874	500m Area Search	4	2
14/7/20	3163817	500m Area Search	5	2 (recorded on 16/7)
15/7/20	3164684	500m Area Search	2	2
17/7/20	3164114	500m Area Search	1	2
22/7/20	3166474	500m Area Search	2	2
23/7/20	3166235	500m Area Search	5	2
27/7/20	3167842	500m Area Search	1	2
28/7/20	3170036	500m Area Search	3	2
29/7/20	3169537	500m Area Search	2	2
30/7/20	3169199	500m Area Search	4	2
29/7/20	3169542	500m Area Search	2	3CW ³
4/8/20	3171488	500m Area Search	1	3 CW
5/8/20	3172554	500m Area Search	4	3 CW
6/8/20	3171368	500m Area Search	5	3CW
6/8/20	3171472	500m Area Search	1	2
21/8/20	3179409	500m Area Search	2	3CW
27/8/20	3180362	500m Area Search	1	2
27/8/20	3180362	500m Area Search	2	3CW
2/9/20	3182030	500m Area Search	2	3CW
3/9/20	3182253	500m Area Search	3	3CW

Location Code

- 1.** 2-ha, 20 min search (50 metre either side of 200 metre carpark strip covering known Swift Parrot feed trees). It includes the 0.51ha bush generation area.
 - 2.** 500m Area Search of whole of both upper and lower built campus. It includes the area surrounding the student accommodation and all of the area included in 1 above.
- 3CW.** 500m Area Search of Conservation Woodland, SE corner of campus. The area was first accessed on 29/7/2020.