

Eastern Blossom Bat

Syconycteris australis
Family Pteropodidae

Other names:

Common Blossom Bat
Queensland Blossom Bat

Conservation Status:

The Eastern Blossom Bat is listed as Vulnerable on the NSW *Threatened Species Conservation Act 1995 (TSC Act)*.



Eastern Blossom Bat *Syconycteris australis* feeding on Swamp Mahogany *Eucalyptus robusta* photo: David Milledge

Distribution, Abundance & Population Trends

Last updated January 2010

National and State

The Eastern Blossom Bat is restricted to the coastal areas of eastern Australia, from Cape York in north Queensland to north-eastern NSW (DEC 2005). It reaches its southern distributional limit on the lower mid-north coast of NSW around Booti Booti.

In north-east NSW the blossom-bat's prime habitats are generally within 2-3 kilometres of the coast. It is occasionally recorded further west in the foothill forests north from Coffs Harbour. Agriculture and urban development have reduced and fragmented much of its coastal habitat but a number of core habitats are protected within coastal national parks and nature reserves.

The NSW Scientific Committee's reasons for listing this species were as follows:

- It's population and distribution are suspected to be reduced
- It faces severe threatening processes
- It depends upon specific habitats (ecological specialist)

Local

Byron Shire sits within a regional stronghold for this species. Near-coastal areas constitute core habitat but the species is also known to extend to the rainforests of the lowlands and foothills. Important coastal populations are known from Billinudgel, Marshalls Creek, Brunswick Heads, Tyagarah, Cumbebin Swamp and Broken Head Nature Reserves as well as Arakwal National Park.

In addition, Inner Pocket Nature Reserve, Whian Whian State Conservation Area and Mount Jerusalem, Nightcap and Goonengerry National Parks support supplementary hinterland habitats.

Freehold lands of the shire also support important blossom-bat habitats. In particular, the Skinners Shoot - Cumbebin Swamp, Suffolk Park - Coopers Shoot and Newrybar areas include important habitats in their own right but also form parts of habitat corridor links for this species.

Other corridors, mapped as part of the Byron Biodiversity Conservation Strategy (2004), are also considered important for this species including coastal corridors and others that link coastal and hinterland habitats.

Ecology

Habitat

The Eastern Blossom Bat is a habitat specialist with particular foraging and roosting requirements. Core foraging is undertaken in nectar producing *Banksia* woodlands, *Melaleuca* and swamp forests, while roosting occurs in littoral rainforests (Churchill 2008).

Habitats for the Eastern Blossom Bat within Byron Shire are found within two to three kilometres of the coast both within reserves and on freehold lands. Supplementary habitats, potentially utilised on a seasonal basis, are found within hinterland rainforests, wet forests supporting rainforest understoreys, and riparian forests. Blossom-bats appear to be important pollinators of the tree species upon which they forage (Hall and Richards 2000).

In north Queensland this species is known to make seasonal use of riparian rainforest habitats away from the coast (Law 2001). The occurrence of sporadic blossom-bat records from hinterland forests, in Byron Shire and elsewhere, suggests that it may also make use of such habitats in north-east NSW.

This possibility has consequences for bush regenerators and others seeking to re-habilitate rainforest along rivers and streams.

Home Range, Shelter and Movements

A radio - tracking study undertaken in Papua New Guinea (Winkelman et al. 2000) showed the Eastern Blossom Bat to have a home range between 2.5 and 14 hectares for males and females. The study showed roost sites and foraging habitats were included within the home range. In north-east NSW, studies have shown that this species moves up to four kilometers from roost sites to exploit nectar and pollen resources (Law 1993). The concept of 'home range' in the specific sense may not be applicable to this species, at least in the north-east NSW part of its range where the availability of food appears to have an important influence on the use of potential habitats (Law 1996).

Radio-tracking studies in north-east NSW suggest that roost selection is highly specific, with roosts being located mainly in rainforest patches but also in *Melaleuca* swamps (Law 1993, 1994b). Individuals appear to roost alone in foliage of the sub canopy and adults tend to change roost site daily.

Juveniles may return to the same roost site over a period of time (Law 1993). Seasonal changes in general roost site location occur evidently in response to temperature, with sites closer to the rainforest edge in winter and further inside rainforest patches in summer (Law 1993). Although highly selective in roost habitat (e.g. rainforest

Figure 2: *Banksia integrifolia* - typical Eastern Blossom Bat foraging habitat.

photo: Dave Milledge



patches), isolated clumps of rainforest trees are also occasionally utilised.

Few data are currently available on regional movements, but banding studies indicate a low frequency of movements of up to 38km throughout the year. Sporadic records of blossom-bats from forest hinterland habitats support the contention that this species may move to exploit seasonally available food resources.

Little is known of this species' dispersal abilities or patterns. It appears that this species is capable of moving over cleared lands, at least to some extent, but it is likely that habitat corridors comprising higher proportions of native vegetation facilitate movement and dispersal. Corridors linking along the coast and between coastal and hinterland habitats have been mapped across Byron Shire as part of the Byron Biodiversity Conservation Strategy (2004).

Diet

In north-east NSW the Eastern Blossom Bat's diet is almost entirely based upon nectar and pollen (Law 1992, 1994a). Coastal heaths and swamp forests are prime habitats where the blossom-bat targets *Banksia* and *Melaleuca* tree species. It also feeds opportunistically

on flowering *Eucalyptus* (e.g. Swamp Mahogany *E. robusta*) and rainforest plants. Only small amounts of fruit remains have been found in the droppings of north-east NSW blossom-bats (Hall and Richards 2000) but it is possible that fruit is eaten opportunistically.

This species' ecological requirements revolve around the need to access reliable and plentiful supplies of nectar and pollen. The abundance and dispersion of food has an important influence on behaviour and the population dynamics of this species over long periods (Law 1996). Individuals return to a limited feeding area (often several hundred square metres) on consecutive nights and will remain faithful to a feeding area while nectar and pollen are available. They will also return to a favoured feeding area over consecutive years (Law 1996). A constant food supply is essential as the species is unable to store energy reserves (Geiser et al. 1996, Geiser 1998).

Breeding

In NSW a single young is born between October and November and another between February and April, while the period of pregnancy is approximately 4 months with lactation occurring for a further 3 months (Churchill 2008).

Threats

Clearing of coastal vegetation

Land clearing has been and remains a significant threat to this species throughout its range. Direct habitat loss and the fragmentation of remnant habitats reduce the viability of populations. Competition with other blossom nomads such as Grey Headed Flying Foxes may also be accentuated by habitat loss.

Indiscriminate burning and wildfire

Regular burning or severe bushfires within the limited coastal habitats occupied by this species has the potential to degrade its habitat and remove its food supply from impacted areas. Coastal reserves supporting important foraging and roosting habitats are prone to fire, often resulting from arsonist or neighbour burns.

Habitat degradation by weed infestation

Weed infestation (e.g. bitou bush *Chrysanthemoides monilifera*) is a major threat as it suppresses the regrowth of critical key food trees such as coast banksia *Banksia integrifolia* (Dodkin and Gilmore 1985). Other weeds of concern within favoured blossom-bat habitats

include lantana *Lantana camara* and asparagus fern *Protasparagus aethiopicus*.

Disturbance at foraging and roosting sites

Known key habitats often correspond with recreation/camping areas within coastal reserves. Disturbance at foraging and roosting habitats is accentuated as recreational pressures increase.

Logging

Logging of wet hardwood forests supporting dense rainforest understoreys potentially inhabited by Eastern Blossom Bats can lead to the direct loss, fragmentation and disturbance of habitat.

Barbed wire fences

The Eastern Blossom Bat is commonly referred to as a miniature flying fox (Churchill 2008). Flying foxes are commonly found tangled, injured or dead in barbed wire fencing in both rural and commercial areas (Wildcare Australia n.d.).

Management Recommendations for Byron Shire

- Long term conservation of the Eastern Blossom Bat within Byron Shire will be enhanced through the consideration and protection of known and predicted habitat within the framework of the Byron Biodiversity Conservation Strategy (2004).
 - I. Investigate the extent to which known and potential Eastern Blossom Bat habitats are protected by the Strategy, paying particular attention to the maintenance and enhancement of landscape connectivity across the Shire.
 - II. Protect and enhance local habitat corridors linking known and potential Eastern Blossom Bat habitats to similar patches of native vegetation.
- Encourage owners of lands supporting known and potential Eastern Blossom Bat habitat to maximise the protection and enhancement of those habitats.
 - I. Highlight the impacts of habitat loss and fragmentation, stock grazing and frequent fires.
 - II. Ensure that affected land owners are aware of funding sources and mechanisms available to support habitat protection and enhancement.
 - III. Exclude stock from littoral rainforest, coastal woodland, heath and swamp forest habitats.
- Protect known Eastern Blossom Bat habitat and all native vegetation comprising potential habitat on coastal sand dunes and flood plains from clearing or development. In particular, retain, protect and restore littoral rainforest, coastal woodland, heath and swamp forest habitats wherever they occur.
- Ensure that Byron Shire Council adopts best practice procedures for Council activities such as infrastructure development, weed control, control burning and bush regeneration within and adjoining Eastern Blossom Bat habitat.
- Ensure appropriate fire hazard burning is in place at areas of known Eastern Blossom Bat habitat.
- Manage and reduce activities that may disturb blossom-bats within known or potential key foraging and roosting habitats. Where necessary preferred habitats should be fenced to reduce and avoid undue disturbance associated with human recreation activities and domestic dogs.
- Manage weed infestations within known and potential Eastern Blossom Bat habitats. Control of bitou bush is a priority as it suppresses the regeneration of important food trees such as Coastal Banksia *Banksia integrifolia*.
- Target the control of foxes, cats and cane toads to known key sites for threatened fauna including the Eastern Blossom Bat.
- Encourage and support Landcare and Dunecare groups, bush regeneration teams and coastal habitat restoration programs, particularly within littoral rainforest, coastal woodland, heath and swamp forest habitats.
- Wherever possible avoid the construction of new public utilities (roads, powerlines) within known or potential Eastern Blossom Bat habitat. Public roads that are no longer required should be revegetated, either naturally or by replanting.
- Map potential habitat across the Byron Shire. This could be accomplished as part of a systematic program of regional predictive modelling (e.g. by DECCW) or undertaken by Byron Shire through a targeted project. Confirmed records of the Eastern Blossom Bat should be compiled as part of that program and used to predict the species' habitat elsewhere.
- Ensure that adequate survey is undertaken for this species wherever development is proposed within or adjacent to known or potential Eastern Blossom Bat habitat. DECC's draft survey and assessment guidelines outline adequate survey levels for this species (DEC November 2004).
- Encourage local research institutions or government to monitor Eastern Blossom Bat populations at key sites and promote surveys within potential habitats. Also encourage research into the ecology of the Eastern Blossom Bat. Key areas of research include: population dynamics, home range and movements, population viability.
- Report all confirmed Eastern Blossom Bat sightings to the "Ecologist" at Byron Shire Council. Records should include date and location (grid reference).

Locations of Threatened Fauna within Byron Shire *Syconycteris australis*

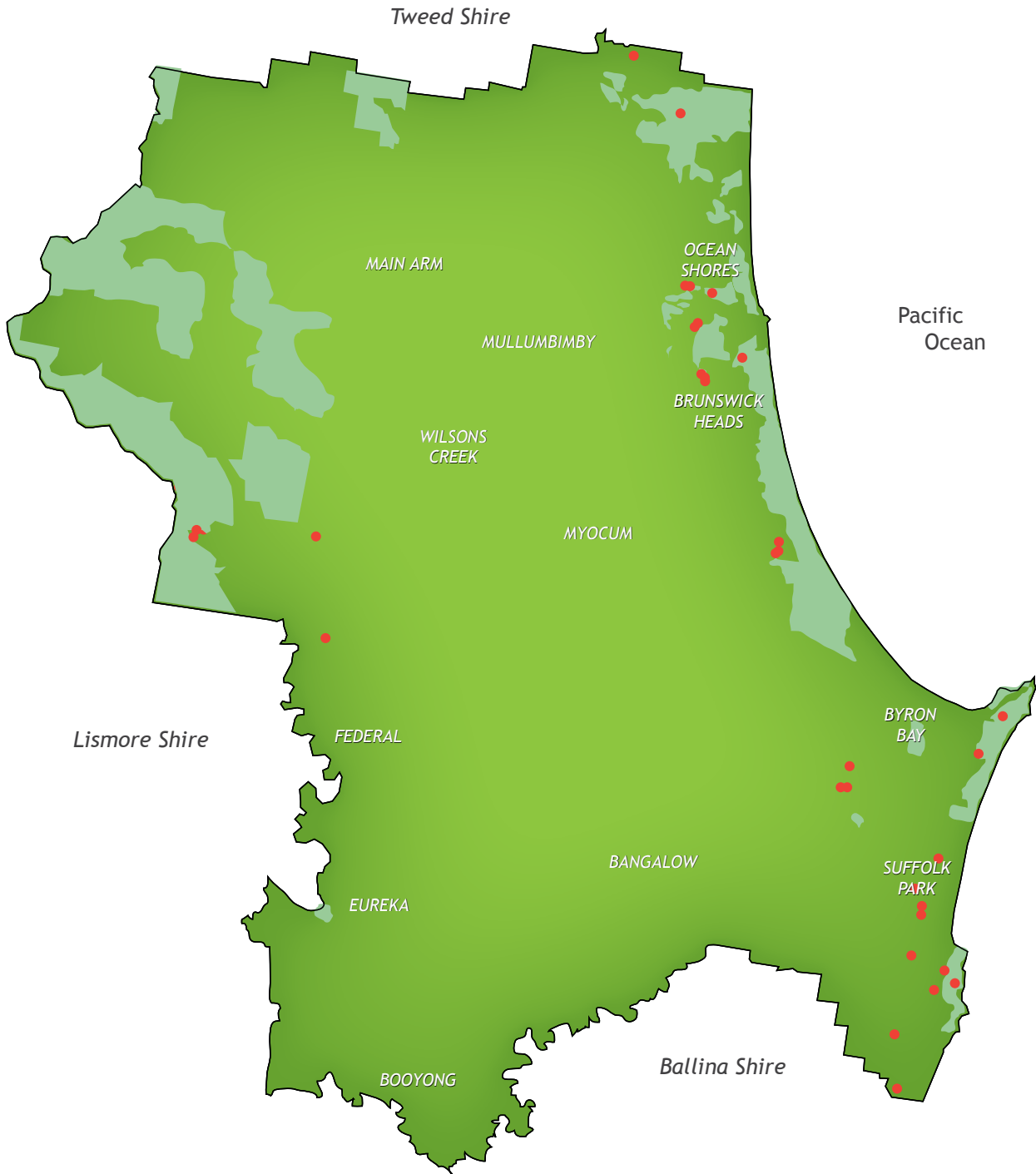


Figure 3: Distribution of the Eastern Blossom Bat *Syconycteris australis* in Byron Shire

References

Byron Biodiversity Conservation Strategy, 2004. Byron Shire Council, Mullumbimby.

Churchill, S. (2008). *Australian Bats - Second Edition*. Allen & Unwin, Crows Nest, NSW.

DEC November 2004. *Draft Threatened Species Survey and Assessment: Guidelines for Development and Activities (Working Draft)*. Department of Environment and Conservation (NSW), Hurstville, NSW.

Department of Environment and Conservation. 2005. *Common Blossom - bat profile*. www.threatenedspecies.environment.nsw.gov.au (accessed 23/11/2009).

Dodkin, M.J. and Gilmore, A.M. 1985. *Species and ecosystems at risk*. Pp. 33-52 in Love, A. & Dyson, R. (eds), *Bitou Bush and Boneseed - A National Conference on Chrysanthemoides monilifera*. National Parks and Wildlife Service and Department of Agriculture, NSW.

Geiser, G. 1998. *Cool bats*. *Nature Australia*, Winter 1998: 56-63.

Geiser, F., Coburn, D.K., Kortner, G. and Law, B. 1996. *Thermoregulation, energy metabolism, and torpor in blossom-bats, Syconycteris australis (Megachiroptera)*. *Journal of Zoology* 239: 583-90.

Hall, L. and Richards, G. 2000. *Flying-foxes; Fruit and Blossom Bats of Australia*. UNSW Press, Sydney.

Law, B.S. 1992. *Physiological factors affecting pollen use by Queensland Blossom Bats (Syconycteris australis)*. *Functional Ecology* 6: 257-264.

Law, B.S. 1993. *Roosting and foraging ecology of the blossom bat, Syconycteris australis, in north-eastern New South Wales: flexibility in response to seasonal variation*. *Wildlife Research* 20: 419-431.

Law, B.S. 1994a. *Banksia nectar and pollen: dietary items affecting the abundance of the common blossom bat, Syconycteris australis, in south-eastern Australia*. *Australian Journal of Ecology* 19: 425-434.

Law, B.S. 1994b. *Climatic limitation of the southern distribution of the common blossom bat Syconycteris australis in New South Wales*. *Australian Journal of Ecology* 19: 366-374.

Law, B. S. 1996. *Residency and site fidelity of marked populations of the common blossom-bat Syconycteris australis in relation to the availability of Banksia inflorescences in New South Wales, Australia*. *Oikos* 77: 447-458.

Law, B. S. 2001. *The diet of the common blossom-bat (Syconycteris australis) in upland tropical rainforest and the importance of riparian areas*. *Wildlife Research* 28: 619-626.

Wildcare Australia. N.d. *Flying Foxes*. Accessed 8/12/09 from, http://www.wildcare.org.au/html/flying_foxes.htm

Winkelman, J. R., Bonacorso, F. J. and Strickler, T. L. 2000. *Home range of the southern blossom bat Syconycteris australis, in Papua New Guinea*. *Journal of Mammalogy* 81(2): 408-414.