

= Variegated fairywren =

The variegated fairywren (*Malurus lamberti*) is a fairywren that lives in diverse habitats across most of Australia . Four subspecies are recognised . In a species that exhibits sexual dimorphism , the brightly coloured breeding male has chestnut shoulders and azure crown and ear coverts , while non @-@ breeding males , females and juveniles have predominantly grey @-@ brown plumage , although females of the subspecies *rogersi* and *dulcis* (previously termed lavender @-@ flanked fairywren) have mainly blue @-@ grey plumage .

Like other fairywrens , the variegated fairywren is a cooperative breeding species , with small groups of birds maintaining and defending small territories year @-@ round . Groups consist of a socially monogamous pair with several helper birds who assist in raising the young . Male wrens pluck yellow petals and display them to females as part of a courtship display . These birds are primarily insectivorous and forage and live in the shelter of scrubby vegetation across 90 % of continental Australia , which is a wider range than that of any other fairywren .

= = Taxonomy = =

The variegated fairywren was officially described by Nicholas Aylward Vigors and Thomas Horsfield in 1827 , and was at first considered a colour variant of the superb fairywren . The scientific name commemorates the British collector Aylmer Bourke Lambert . It is one of 12 species of the genus *Malurus* , commonly known as fairywrens , found in Australia and lowland New Guinea . Within the genus it belongs to a group of four very similar species known collectively as the chestnut @-@ shouldered fairywrens . The other three species are localised residents in restricted regions of Australia : the lovely fairywren (*M. amabilis*) of Cape York , the red @-@ winged fairywren (*M. elegans*) of the southwest corner of Western Australia , and the blue @-@ breasted fairywren (*M. pulcherrimus*) of southern Western Australia and the Eyre Peninsula . A 2011 analysis by Amy Driskell and colleagues of mitochondrial and nuclear DNA found that the lovely fairywren was nested within the variegated fairywren complex , and was the sister taxon of the purple @-@ backed subspecies *assimilis* .

Like other fairywrens , the variegated fairywren is unrelated to the true wrens . Initially fairywrens were thought to be a member of the Old World flycatcher family Muscicapidae or warbler family Sylviidae , before being placed in the newly recognised Maluridae in 1975 . More recently , DNA analysis has shown the family to be related to Meliphagidae (honeyeaters) and the Pardalotidae in a large superfamily Meliphagoidea .

= = = Subspecies = = =

Four subspecies are recognised ; there are zones with intermediate forms between the ranges of each subspecies , contrasting with the well @-@ defined borders between *M. lamberti* and the other chestnut @-@ shouldered wrens . However , molecular analysis may shed more light on relationships and the current taxonomic treatment may change . The purple @-@ backed- and lavender @-@ flanked fairywrens were considered distinct species in the past .

M. l. lamberti is the nominate subspecies from coastal eastern Australia and the original form described by Vigors and Horsfield in 1827 . Unlike other subspecies , the head of a male in breeding plumage is a more uniform blue , with the crown azure and ear coverts lighter . It also has a blue rather than purple back .

M. l. assimilis , commonly known as purple @-@ backed fairywren , occurs across central Australia , from Queensland and western New South Wales to coastal Western Australia . It was initially described in 1901 by Australian ornithologist Alfred John North and called the purple @-@ backed superb warbler . Breeding males of this and the other two northern subspecies differ from subspecies *lamberti* in having a darker violet blue crown and a purple back . Females are identical , however . There is a broad area where intermediate forms between this and subspecies *lamberti* live that is bordered by Goondiwindi , Wide Bay , Rockhampton and Emerald in southern

Queensland .

M. l. dulcis , commonly known as lavender @-@ flanked fairywren , is found in Arnhem Land . It was described in 1908 by amateur ornithologist Gregory Mathews , though this and subspecies *rogersi* were long considered forms of the lovely fairywren (*M. amabilis*) until integrades were noted over a wide area of northern Australia with subspecies *assimilis* . Like subspecies *rogersi* , females are predominantly blue @-@ grey rather than grey @-@ brown and have white lores and eye rings rather than the rufous coloration of the other subspecies .

M. l. rogersi occurs in the Kimberleys and was originally named by Mathews in 1912 . It was also known as the lavender @-@ flanked fairywren and considered as the same taxon . Though the males are similar to the widely occurring inland subspecies *assimilis* , the females are predominantly blue @-@ grey rather than grey @-@ brown . A broad hybrid zone with females of both subspecies has been recorded from northeastern Western Australia and the northwestern Northern Territory .

== Evolutionary history ==

In his 1982 monograph , ornithologist Richard Schodde proposed a northern origin for the chestnut @-@ shouldered fairywren group due to the variety of forms in north and their absence in the southeast of the continent . Ancestral birds spread south and colonised the southwest during a warm wetter period around 2 million years ago at the end of the Pliocene or beginning of the Pleistocene . Subsequent cooler and drier conditions resulted in loss of habitat and fragmentation of populations . Southwestern birds gave rise to what is now the red @-@ winged fairywren , while those in the northwest of the continent became the variegated fairywren and yet another isolated in the northeast became the lovely fairywren . Further warmer , humid conditions again allowed birds to spread southwards , this group occupying central southern Australia east to the Eyre Peninsula became the blue @-@ breasted fairywren . Cooler climate after this resulted in this being isolated as well and evolving into a separate species . Finally , after the end of the last glacial period 12 @,@ 000 ? 13 @,@ 000 years ago , the northern variegated forms have again spread southwards , resulting in the purple @-@ backed subspecies *assimilis* . This has resulted in the variegated fairywren 's range to overlap with all three other species . Schodde also proposed that the blue @-@ grey coloured females of the lavender @-@ flanked subspecies were ancestral , while the browner coloration of females of southern forms was an adaptation to dry climates . Further molecular studies may result in this hypothesis being modified .

== Description ==

The variegated fairywren is 14 ? 15 cm (5 @.@ 5 ? 6 in) long and weighs 6 ? 11 g (0 @.@ 21 ? 0 @.@ 39 oz) . Like other fairywrens , it is notable for its marked sexual dimorphism , males adopting a highly visible breeding plumage of brilliant iridescent blue and chestnut contrasting with black and grey @-@ brown . The brightly coloured crown and ear tufts are prominently featured in breeding displays . The male in breeding plumage has striking bright blue ear coverts , with the crown often slightly darker , a black throat and nape , a royal blue upper back , chestnut shoulders and a bluish @-@ grey tail . The wings are grey @-@ brown and the belly creamy white . Non @-@ breeding males , females and juveniles are predominantly grey @-@ brown in colour ; all males have a black bill and lores (eye @-@ ring and bare skin between eyes and bill) , while females have a red @-@ brown bill and bright rufous lores . Immature males will develop black bills by six months of age and moult into breeding plumage the first breeding season after hatching , though this may be incomplete with residual brownish plumage and may take another year or two to perfect . Both sexes moult in autumn after breeding , with males assuming an eclipse non @-@ breeding plumage . They will moult again into nuptial plumage in winter or spring . The blue coloured plumage , particularly the ear @-@ coverts , of the breeding males is highly iridescent due to the flattened and twisted surface of the barbules . The blue plumage also reflects ultraviolet light strongly , and so may be even more prominent to other fairywrens , whose colour vision extends into that part of the spectrum .

Vocal communication among variegated fairywrens is used primarily for communication between birds in a social group and for advertising and defending a territory . The basic song type is a high @-@ pitched reel of a large number of short elements (10 ? 20 per second) ; this lasts 1 ? 4 seconds . The reel of the variegated fairywren is the softest of all malurids . Birds maintain contact with each other by tsst or seeee calls , while a short , sharp tsit serves as an alarm call .

= = Distribution and habitat = =

Distributed over 90 % of the Australian continent , the variegated fairywren is found in scrubland with plenty of vegetation providing dense cover . It prefers rocky outcrops and patches of Acacia , Eremophila or lignum (Muehlenbeckia florulenta) in inland and northern Australia . They have been reported to shelter in mammal burrows to avoid extreme heat . In urban situations such as suburban Sydney , these wrens have been said prefer areas with more cover than the related superb fairywren , though a 2007 survey in Sydney 's northern suburbs has proposed that variegated fairywrens may prefer areas of higher plant diversity rather than denser cover as such . Forestry plantations of pine (Pinus spp .) and eucalypts are generally unsuitable as they lack undergrowth .

= = Behaviour = =

Like all fairywrens , the variegated fairywren is an active and restless feeder , particularly on open ground near shelter , but also through the lower foliage . Movement is a series of jaunty hops and bounces , its balance assisted by a relatively large tail , which is usually held upright , and rarely still . The short , rounded wings provide good initial lift and are useful for short flights , though not for extended jaunts . During spring and summer , birds are active in bursts through the day and accompany their foraging with song . Insects are numerous and easy to catch , which allows the birds to rest between forays . The group often shelters and rests together during the heat of the day . Food is harder to find during winter and they are required to spend the day foraging continuously .

Like other fairywrens , male variegated fairywrens have been observed carrying brightly coloured petals to display to females as part of a courtship ritual . In this species , the petals that have been recorded have been yellow . Petals are displayed and presented to a female in the male fairywren 's own or another territory .

The variegated fairywren is a cooperative breeding species , with pairs or small groups of birds maintaining and defending small territories year @-@ round . Though less studied than the superb- and splendid fairywrens , it is presumably socially monogamous and sexually promiscuous , with each partner mating with other individuals . Females and males feed young equally , while helper birds assist in defending the territory and feeding and rearing the young . Birds in a group roost side @-@ by @-@ side in dense cover as well as engage in mutual preening . Occasionally larger groups of around 10 birds have been recorded , though it is unclear whether this was incidental or a defined flock .

Major nest predators include Australian magpies (Gymnorhina tibicen) , butcherbirds (Cracticus spp .) , laughing kookaburra (Dacelo novaeguineae) , currawongs (Strepera spp .) , crows and ravens (Corvus spp .) , and shrike @-@ thrushes (Colluricincla spp .) , as well as introduced mammals such as the red fox (Vulpes vulpes) , feral cats and black rat (Rattus rattus) . The variegated fairywren readily adopts a ' rodent @-@ run ' display to distract predators from nests with young birds . The head , neck and tail are lowered , the wings are held out and the feathers are fluffed as the bird runs rapidly and voices a continuous alarm call .

= = = Diet = = =

The variegated fairywren consumes a wide range of small creatures , mostly insects , including ants , grasshoppers , bugs , flies , weevils and various larvae . Unlike the more ground @-@ foraging superb fairywrens , they mostly forage deep inside shrubby vegetation , which is less than 2 m (6 @.@ 6 ft) above the ground .

== Breeding ==

Breeding occurs from spring through to late summer ; the nest is generally situated in thick vegetation and less than 1 m (3 @. 3 ft) above the ground . It is a round or domed structure made of loosely woven grasses and spider webs , with an entrance in one side . Two or more broods may be laid in an extended breeding season . A clutch consists of three or four matte white eggs with reddish @-@ brown splotches and spots , measuring 12 mm × 16 mm (0 @. 47 in × 0 @. 63 in) . The female incubates the eggs for 14 to 16 days , after which newly hatched nestlings are fed and their fecal sacs removed by all group members for 10 ? 12 days , by which time they are fledged . Parents and helper birds will feed them for around one month . Young birds often remain in the family group as helpers for a year or more before moving to another group , though some move on and breed in the first year . Variegated fairywrens commonly play host to the brood parasite Horsfield 's bronze cuckoo (*Chrysococcyx basalis*) and , less commonly , the brush cuckoo (*Cacomantis variolosus*) and fan @-@ tailed cuckoo (*C. flabelliformis*) .

== Cultural depictions ==

The variegated fairywren appeared on a 45c postage stamp in the Australia Post Nature of Australia ? Desert issue released in June 2002 .