Fauna of the Wolli Valley in Inner south-west Sydney

Deb Little, Peter Stevens, Gavin Gatenby and Voren O'Brien

Wolli Creek Preservation Society PO Box 270 Earlwood 2206

info@wollicreek.org.au

ABSTRACT

Wolli Creek is a Sydney inner-urban stream. Mostly cleared by the 1930s, 5 km of its valley were saved as a natural area by its location, its later reservation for a road, and by community action, which sent the road (M5) underground. Now being amalgamated into a 50 hectare Regional Park under National Parks and Wildlife Service management, it remains under threat. It has many diverse plant communities and a surprisingly large array of fauna, particularly birds and reptiles. Bird records exist back to the 1940s, with 100 species being sighted each year in recent times and previously unrecorded ones being added each year through monthly surveys by local volunteers. Also recorded are seventeen species of native reptile, five frog, four mammal, and ten fish species, plus a variety of feral species, although few systematic surveys have been made, mainly of a snapshot variety. Examples of each of these groups are shown or listed and the studies referenced. The gap with invertebrates is noted. The Wolli Creek Preservation Society is a local community group that has driven the protection and restoration of the habitats in the valley and the study of its interesting biodiversity.

Key words: Wolli Creek; M5; urban bushland; bush regeneration; fauna surveys; birds; herpetofauna; mammals; Grey-headed Flying-fox

Introduction:

The Wolli Valley (pronounced Woll-i, as in Bond-i) in Sydney's inner south west contains a stretch of bushland remarkable in many ways, notwithstanding that it lies within the Cooks River catchment, one of the most densely populated and urbanised catchments in greater Sydney. It is remarkable that it is still there; that it contains such a diversity of landforms, plant communities and habitat types; and that it hosts such a range of native fauna. Wolli Creek itself, which flows eastwards to the Cooks River adjacent to this stretch of bushland, is also one of the few remaining inner-urban creeks that still have substantial lengths of near-natural banks.

Landforms and vegetation

Wolli Creek rises in Wianamatta shale country near present day Narwee/Roselands. East of Bexley Road there is a stretch of about 5 km of remnant bushland before its junction with the Cooks River at Tempe. Upper Wolli Creek has been cleared of the Cooks River/Castlereagh Ironbark Forest that once occurred extensively in inner south western Sydney, save for a very small remnant (under one hectare) adjacent to the M5 east motorway and Moorefields golf course at Beverly Hills. East of Bexley North (Bexley Road), exposed Hawkesbury sandstone dominates, and gives rise to a rugged landscape with steep hillsides and high cliffs. Sydney sandstone gully woodland, open forest and heathland occupies this terrain, with remnants of floodplain forest found on alluvial soils along Wolli Creek, and mangroves, reedlands and saltmarsh in the lower reaches. Trees found in the sandstone forests and woodland include *Eucalyptus piperita* (Sydney Peppermint) *Eucalyptus pilularis* (Blackbutt), *Corymbia gummifera* (Red Bloodwood) and *Angophora costata*, (Smooth-barked Apple), with an understorey that includes *Banksia serrata* (Old Man Banksia), *Allocasuarina littoralis* (Black Sheoak), *Leptospermum polygalifolium* (Teatree) various *Acacia* species, *Lomandra longifolia (Mat Rush)*, and banks of *Calochlaena dubia* (Soft Bracken). Common plants within the low shrubby heathland found on shallow soils along ridge crests and exposed rock platforms include *Kunzea ambigua* (Tick Bush) and *Epacris longiflora* (Native Fuschia). *Syncarpia glomulifera* (Turpentine) trees are also found where there is shale influence, and remarkably, a number of *Ceratopetalum apetalum* trees (Coachwood), *Tristaniopsis laurina* (Water Gum) and *Syzygium paniculatum* (Lilly Pilly) can still be found alongside the creek at Bexley North (only 150 metres from the western portal of the M5E motorway tunnel).

Aerial photo of Wolli Valley.

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Brief History of Wolli Valley: amazing survival

In Pre-European times the Wolli Valley was the home of the Bidjigal clan. Knowledge of the lives of the traditional Aboriginal people who lived in the area is scant, but it is likely from what information is available (Madden and Muir 1996), and from the presence of middens, that fish and shellfish would have been taken from Wolli Creek, possums hunted for food and clothing, and edible fruits, rhizomes and tubers eaten from the bushland. A number of rock shelters have been identified (Tranby 1986), and these are likely to have been used by the original inhabitants.

Early European settlement saw the Wolli Valley initially exploited for timber, charcoal burning and near subsistence farming. Later, it became a place for noxious industries such as tallow factories and wool scouring. Market gardens were extensive on the flood plains of the creek from the 1850s onwards, and piggeries, dairying, orchards and poultry farming took place in and around the Valley. The survival of the Wolli Valley's native ecosystems into the 21st century is quite remarkable. Although much land speculation took place (including with the opening of the East Hills railway line in 1931), it avoided major residential and industrial development because the valley was isolated, narrow and difficult to access, and was located away from the main avenues of development. From 1949, under the County of Cumberland Plan, the valley's bushland was largely within a road reservation (the M5 East corridor). Concerted community action during the 1980s and 1990s to prevent the destruction of the Wolli Valley in order to build an eight lane elevated freeway, resulted in the M5 East road tunnel.

Currently, a Regional Park is being established under the National Parks and Wildlife Service (NPWS), covering 50 hectares of the bushland and open parkland.While this will be the most protective land tenure status the valley has ever had since European settlement, the local community's long fight to preserve the valley's natural values may not yet be over. The planned expansion of Sydney Airport and Port Botany, and pressures for more roads, as well as other infrastructure operations and possible development still pose threats to the bushland and creek. The residential development that was possible on the ridge tops and upper slopes (and which took place throughout Sydney's sandstone areas) coupled with the valley's long, linear shape and its past land uses, pose typical land, vegetation and fauna management challenges. Bush regeneration and revegetation work is now actively underway in various areas throughout the valley after a long period of neglect of much of the area while under the road reservation. Accompanying this has been a renewed interest in the local and visiting fauna, especially birds. For more on the history of the valley see Madden and Muir (1996).

The Wolli Valley's natural values

The topography and associated vegetation of the valley as well as the creek itself provides a diverse range of habitats. The flora of the valley has been well documented, with around 300 species of native plants identified (Perkins 2000). Weed species are also obvious in many areas, especially in close proximity to Wolli Creek, and while weed management and removal is a focus of bush regeneration work, some weed presence is not necessarily negative or detrimental when viewed from an animal habitat perspective.

Published information on the fauna of the valley (aside from birds) has been largely of the 'snapshot' or rapid assessment variety; such as consultants' fauna studies relating to the M5 East motorway Environmental Impact Statement (Manidis Roberts 1994), and most recently by the Department of Environment and Climate Change (DECC 2007). There is other information about Wolli fauna from opportunistic sightings by Wolli Creek Preservation Society (WCPS) members, many documented by photographs but only published via email exchanges and website postings (see www.wollicreek.org.au for access to these).

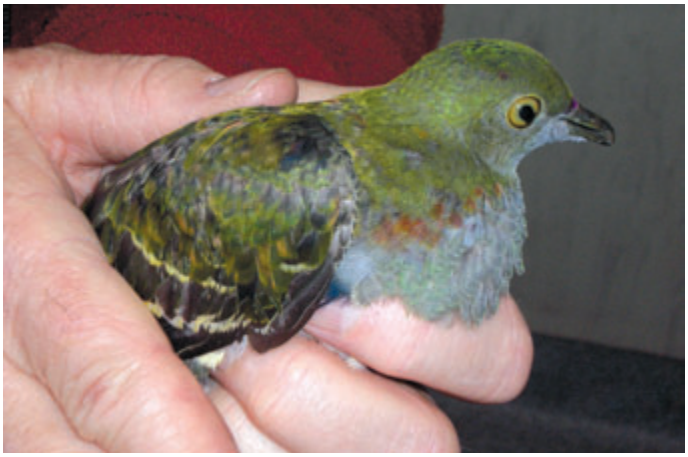
Birds

The Wolli Valley is an attractive haven for birds. It provides food, shelter, a passageway and resting place for migratory species and a niche in its own right for resident birds. It provides a major west-east corridor for migrants moving between the high country west of Sydney and the coast, and it serves as a significant stepping-stone across Sydney's urban south for migrants moving north-south. The valley's diversity and strategic location are reflected in the wide range of bird species to be found there.

The Wolli Valley has been important to Australian ornithological studies. As early as the late 1890s, Alfred J. North (the Australian Museum's ornithologist from 1891 to 1917) observed birds and collected nests and eggs in the Wolli Creek and Cooks River area. The valley also provided a stimulating environment for the work of three other distinguished ornithologists: Laurie Courtney-Haines, Professor Allen Keast and Arnold McGill. Local resident and ornithologist Neil Rankin continued the documentation of the 'Birds of Wolli' from 1982 to 1999, drawing on the records of Arnold McGill in particular to extend the records back to1940. Over 150 species of birds, representing over 25% of the bird species listed for New South Wales, have been recorded in the valley since 1940. In any year close to 100 species are observed. A summary of Rankin's observation and research has been published WCPS (2006). His full records are lodged with the Australian Museum, see WCPS (2006) for access details.

Yellow-tailed Black Cockatoo *Calyptorhynchus funereus.* This species was first recorded in Wolli Valley in 1992. It has become a common sight since then.

These records of Rankin, McGill and others over such an extended period provide great opportunities for long-term studies of changes in bird populations in response to growing urbanisation but also to habitat renewal. Few other places in Australia offer such a wealth of information, over such a lengthy period of time. In 2007, a team of regular bird surveyors was assembled to continue the work of Neil Rankin and those before him. Sightings in 2007 of importance for the valley's records include Tawny Frogmouth *Podargus strigoides*, Variegated Fairy Wren *Malurus lamberti*, Superb Fruit-dove *Ptilinopus superbus*, Bar-shouldered Dove *Geopelia humeralis,* and Peregrine Falcon *Falco peregrinus*.



Purple-crowned Fruit-Dove *Ptilinopus superbus, also known as the* Superb Fruit-dove. In June 2007 this juvenile Purple-crowned Fruit-Dove was rescued after being injured in the Wolli Valley. The species has only been recorded in the Sydney region about 20 times since 1953 (a 2002 record is from Earlwood) and only once before 1953 (in 1876!).

Herpetofauna

The valley's many exposed sandstone outcrops, overhangs, crevices and ledges provide good habitat opportunities for reptile species, of which at least 17 species have been identified (DECC, 2007; WCPS, 2007). One deep rock crevice within the Wolli bushland provided the site for the first documented account of the mating of wild Red-bellied Black Snakes *Pseudechis porphyriacus* (Rankin, 1976). Red-bellied Black Snakes are still active in the area, and are often seen down near the creekline, and sometimes elsewhere during the mating season, when they travel further afield. Recent sightings have been made at Bardwell Park, Undercliffe, and at Turrella Reserve. A number of skink species are still extant, including the Bar-sided skink *Eulamprus tenuis*, Eastern Water Skink *Eulamprus quoyii*, Copper-tailed skink *Ctenotus taeniolatus*, and Eastern Blue-tongue Lizard *Tiliqua scincoides*. Other lizards include the Jacky Lizard *Amphibolurus muricatus*, Eastern Water Dragon *Physignathus lesueurii*, and Broad-tailed Gecko *Phyllurus platurus*. Both juveniles and adults of the Eastern Long-necked Turtle *Chelodina longicollis* are occasionally seen in the valley's bushland and creek, but more regularly, disturbed nest sites are found, which we presume have been raided by foxes (also regularly seen in the valley and surrounding neighbourhood). Certainly the largely natural and still vegetated banks of Wolli Creek are important for this species.

Red-bellied Black Snake *Pseudechis porphyriacus* is one of the most common snakes in the Sydney region and is often seen in the Valley down near the creek-line where frogs, a favoured prey, live. During the mating season, they sometimes travel further afield, maybe 50 metres or more from the stream. While red-bellied black snakes are venomous, they are very shy and would rather retreat than bite. They are rarely seen because they sense the vibrations of one's approach. There have been recent sightings at Bardwell Park and Undercliffe. The snake pictured here was photographed in June 2007 in Turrella Reserve.

Bar-sided Skink *Eulamprus tenuis* is not commonly seen in the Valley but one individual can regularly be seen along the Girrahween Track in a hole in an Old Man Banksia. It is smaller than many other species - only growing to 16 cm.

Eastern Water Skink *Eulamprus quoyii* frequents streams and creeks in Sydney bushland. It is commonly seen throughout the Wolli Valley in both bushland and home gardens. It grows to about 25 cm long.

Copper-tailed Skink *Ctenotus taeniolatus* is a common Sydney species. It grows to about 20 cm in length. This skink is particularly common in the sandstone heath on and around Nannygoat Hill.

Eastern Blue-tongue Lizard *Tiliqua scincoides* is one of Australia's favourite reptiles, also called the Eastern Blue-tongued skink. It is the largest skink found in Australia. These are usually sighted sunbaking near various tracks in the Wolli Valley including Waterworth Park, Girrahween Park and the Girrahween track to Turrella Reserve. They are not overly shy, but will slowly amble into the bush if disturbed.

Jacky Lizard *Amphibolurus muricatus* belong to the large genus of Australian Dragon lizards and are also known as Jacky Dragons or Tree Dragons. They are mainly found along the coast and ranges of Eastern Australia in dry sclerophyll forests, rocky ridges and coastal heathland. In the Wolli Valley they are mainly known around the Nannygoat Hill area. Jacky Lizards range from pale grey to dark brown in colour, but are also able to disguise their body outline by colouring (crypsis). Both grey-brown and yellow dragons have been observed near Nannygoat Hill.

Eastern Water Dragon *Physignathus lesueurii*, a large dragon found on the eastern coast, it grows to about 80 cm long. These dragons range in colour from dark to light brown, sometimes with darker bands. They have a distinctive dark band along the side of the head from behind the eye. The one in this photo was spotted in January 2007 on the creek bank near Nannygoat Hill. It is an almost undifferentiated pale brown colour and without any of the strong markings usual to the species. The pale brown colouring is the normal result of the lizard's old skin lifting slightly before being shed and it was later spotted with her fresh, new skin. She is also pregnant.

Broad-tailed Gecko *Phyllurus platurus*, photographed in a crevice in a sandstone ledge, a common location for these geckos. They have been seen in a number of locations in the Wolli Valley.

Eastern Long-necked turtle *Chelodina longicollis* is also known as the Eastern Snake-necked Turtle. It lives in coastal and inland waterways and wetlands. While these turtles have been observed in the Valley, it is more regular to find disturbed nest sites (presumed to be raided by foxes). Detailed study is needed to ascertain whether the turtles seen in the Valley are a few aging individuals who are unable to breed successfully. Recently two hatchlings have been found, one well away from the creek.

Frogs

Five species of frogs have been identified as present since 1997 (DECC 2007): the Common Eastern Froglet *Crinia signifera*, Striped Marsh Frog *Limnodynastes peronii*, Eastern Dwarf Tree Frog *Litoria fallax*, Peron's Tree Frog *Litoria peronii,* and the Green Tree Frog *Litoria caerulea*.

Mammals

Many urban bushland reserves in Sydney, particularly linear reserves with high edge effects, are depauperate in mammal species. The Wolli Valley is no exception. Until recently, the Common Brushtail possum *Trichosurus vulpecula*, along with microbat species, at least Gould's Wattled Bat *Chalinolobus gouldii* and Common Bent-wing Bat *Miniopterus schreibersii*, appeared to be the only surviving native mammals (Manidis Roberts, 1994)). Bandicoots have been positively identified by NPWS staff in nearby Dulwich Hill, although occasional suggestive diggings in the Wolli Valley have not yet been confirmed. However, around mid-2007, a Grey-headed Flying-fox *Pteropus poliocephalus* camp was established on the south side of Wolli creek in an area not readily accessible to the public. At first reported to involve only 50 or 60 animals, by the end of 2007 WCPS members who had been observing the evening exodus of Flying-foxes estimated that as many as 1000 individuals were involved.

Grey-headed Flying-fox. A new roost site. Photo: Andrew Smith.

The roost site is amongst trees planted in a regeneration project started in the late 1980s. The Wolli bat group offers an opportunity for research into the dynamics of a small but growing roost site. Regular monthly counts are undertaken as part of a co-ordinated national exercise. The April 2010 count was 15,600.

Fish

Little has been known about the fish species (fresh and salt water) to be found in Wolli Creek. However, recent baseline sampling carried out by the NSW Department of Primary Industries and the City of Cantebury in

November 2007, in advance of the installation of a fishway at Turrella weir, has identified six native fish species in the freshwater section above the Henderson Street weir. These were Empire Gudgeon *Hypseleotris compressa*, Flathead Gudgeon *Philypnodon grandiceps*, Striped Gudgeon *Gobiomorphus australis*, Firetail Gudgeon *Hypseleotris galii*, Common Galaxia *Galaxias maculatus*, and Long-Finned Eel *Anguilla reinhardtii*.

In the brackish to salt water immediately below the weir, the following species were collected: Sea Mullet *Mugil cephalus*, Yellow-fin Bream *Acanthopagrus australia*, Port Jackson Perchlet *Ambassis jacksoniensis*, and Toadfish *Tetractenos sp.*

Invertebrates

There have been no systematic studies of the invertebrate life ("the other 99%") in the Wolli Valley, but there is a growing collection of photographs of species seen locally that can be accessed at http://www.flickr.com/photos/14316262@N00/sets/.

Future Directions

Campaigning to preserve the existence of the bushland in the Wolli Valley consumed much of the time and energy of the WCPS after its formation in 1984. However, the M5E motorway was routed through a tunnel in 2000, and the bushland saved. Since 2002, considerable effort has been put into bushland restoration at a large number of sites scattered along the valley. This is a very long-term program, after 50 years essentially of neglect of a valley that had been largely cleared by the 1930s.

The bushland areas need to be consolidated and linked up, both within the valley and with other nearby areas. Weed removal will inevitably be slow, and desirably so, since habitat needs to be maintained to support the existing fauna and encourage the return of others. The aging of regrowth trees since the earlier clearing of the valley will in time lead to the development of the hollows needed by some fauna species and the installation of the fishway on the creek could encourage a greater range of fish species. These changes, together with the recent sighting of additional bird species, the return of Flying-foxes and the prospective return of Bandicoots, encourages us to expect that the next decade will see further increases in the important biodiversity in this remarkable inner-urban remnant.

The Wolli Valley offers an important site for studies about urban impacts and fauna presence, and there is an urgent need for sustained research to establish what the baseline is as another round of change comes to the valley (this time in the direction of enhanced habitat, but also new and different human impacts from walkers and regenerators), and to monitor the ongoing changes in fauna.

The very recent establishment of the valley's Flying-fox camp could present an opportunity for studies of the population dynamics of encampments as well as predator and scavenger species that may be attracted by them and of changes to the vegetation community that may result.

The Society also wants to know more about its population of Eastern Long-necked Turtles *Chelodina longicollis* and the likely impact on them of the fox presence.

Microbats have recently been observed again in the valley, but nothing is known of their species or population size and the Society as yet knows little about the aquatic and invertebrate species present. There are undoutedly more species of frog present than reported above. More extensive study is desirable.

There is an apparent absence of certain key native mammal species for which, following several decades of regrowth of native plant communities, there would now appear to be sufficient habitat to support viable populations. These include Bush Rat *Rattus fuscipes*, Swamp Rat *Rattus lutreolus*, Brown Antechinus *Antechinus stuartii,* and Ringtail Possum *Pseudocheirus peregrinus*. The Society would value discussion with, and research by, experts in this area.

The Wolli Creek Preservation Society can be contacted via (02) 9554 3176 or info@wollicreek.org.au. Its website is www.wollicreek.org.au.

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