

Dargan, G. (2007). First Record of *Thecostegites* (Cnidaria: Tabulata) from central New South Wales. *Proceedings of the Linnean Society of New South Wales* **128**, 217-222.

Thecostegites myolaensis, a new species of tabulate coral, is described from northwest of Parkes, New South Wales. This is the only record of *Thecostegites* from the Australian mainland. Associated conodonts establish a latest Ludlow (Late Silurian) age for this species, making this the oldest recorded occurrence of the genus. Comparison with *Thecostegites* species from the Pridoli of Tadjikistan and the Polar Urals suggests that the genus originated in Australia and subsequently spread to these regions.

Holmes, W.B.K. and Anderson, H.M. (2007). The Middle Triassic Megafossil Flora of the Basin Creek Formation, Nymboida Coal Measures, New South Wales, Australia. Part 6. Ginkgophyta. *Proceedings of the Linnean Society of New South Wales* **128**, 155-200.

The Ginkgophyte Flora from two quarries in the Basin Creek Formation of the Middle Triassic Nymboida Coal Measures of north eastern NSW Australia is described and illustrated. This includes the first record from Australia of *Hamshawvia*, a female strobilus bearing a pair of megasporophylls. *Hamshawvia* and the male strobilus *Stachyopitys* are regarded as the fructifications of the plants bearing *Sphenobaiera* leaves. Two of the *Hamshawvia* specimens are placed in *H. distichos* sp. nov. and a third in *H. sp. A*. Several specimens of *Stachyopitys* strobili are compared with *S. matatilonus* and *S. lacrisporangia* from the Molteno Formation of South Africa. The Ginkgophyte leaves form c. 10% of the collected leaf fossils from the Nymboida localities and are placed in the genera *Ginkgoites* (four morpho-species) and *Sphenobaiera* (eight morpho-species). In the absence of preserved cuticle the morpho-species are differentiated on characters of gross morphology. In five cases where sufficient specimens of a particular form are available to indicate a natural range of variation they are placed in a 'morpho-species complex'. New leaf taxa are the morpho-species *Ginkgoites nymboidensis* sp. nov., *Sphenobaiera paucinerva* sp. nov., *S. densinerva* sp. nov. and *S. nymbolea* sp. nov.

Huveneers, C., Otway, N.M. and Harcourt, R.G. (2007). Morphometric relationships and catch composition of wobbegong sharks (Chondrichthyes: *Orectolobus*) commercially fished in New South Wales, Australia. *Proceedings of the Linnean Society of New South Wales* **128**, 243-250.

Wobbegongs (*Orectolobiforme*) are commercially targeted in New South Wales, Australia. Catches have declined approximately 60% in a decade, leading to concerns over the fishery's sustainability. However, length and weight composition of the catch is unknown as carcasses are trunked (i.e. beheaded and eviscerated) before landing. We provide parameters for length-length, weight-weight and weight-length relationships to convert carcass length and carcass weight measurements to total lengths and total weights used in fisheries assessments. Neonates and small juveniles were conspicuously absent in the length-frequency distributions of all three species, suggesting the potential existence of nursery areas not available to the commercial fishery.

Keith, D. A., Simpson, C., Tozer, M. G. and Rodoreda, S. (2007). Contemporary and historical descriptions of the vegetation of Brundee and Saltwater Swamps on the lower Shoalhaven River floodplain, southeastern Australia. *Proceedings of the Linnean Society of New South Wales* **128**, 123-154.

Coastal floodplains are functionally important and highly endangered ecosystems in southeastern Australia, which have a long history of exploitation and environmental modification. In this study, we undertook a systematic survey of contemporary vegetation in two recently established nature reserves on the south coast of New South Wales and investigated historical records of the vegetation and environment to infer likely changes since European settlement. An analysis of floristic samples showed that the present-day floodplain vegetation includes a mosaic of woodlands, forests and saltmarsh/reedland (five communities) that contrast markedly in species composition and structure to eucalypt forests that occupy the surrounding hills (two communities). One hundred and forty-nine plant species were recorded in 24 0.04 ha samples within the reserves, with Poaceae and Cyperaceae represented by the most species on the floodplain. Some parts of the floodplain contain substantial weed infestations, while other parts of the floodplain are largely free of weeds. The vegetation underwent a series of changes since the first recorded observations in 1805. At that time the floodplain included a mosaic of woodland, grassland and reedland. Native grassland now appears to be extinct as a result of subsequent clearing, intensive cattle grazing, pasture improvement and changes to drainage. A network of drains was initially constructed around 1900 and further developed in the 1960s resulted in soil oxidation. This may have made the floodplain soils more suitable for woody plant species, but recruitment has been largely prevented by intensive cattle grazing. A recent expansion of *Casuarina*

and *Melaleuca* scrub and forest is evident within the nature reserves since their dedication and exclusion of livestock in 2001, but not on adjoining properties where intensive cattle grazing continues. We conclude that the reserves include important samples of remnant floodplain vegetation and that the vegetation is in a continuing state of flux regulated by changing flood and tidal regimes and grazing regimes.

Kellermann, J. & Udovicic, F. (2007). A Revision of the *Cryptandra propinqua* complex (Rhamnaceae: Pomaderreae). *Proceedings of the Linnean Society of New South Wales* **128**, 81-98.

Four species are recognised in the *Cryptandra propinqua* complex: *C. propinqua* A. Cunn. ex Fenzl, *C. ciliata* A.R. Bean, *C. speciosa* A. Cunn. ex Kellermann & Udovicic, here as new described, and *C. magniflora* F. Muell., here re-instated. Two subspecies are recognised and described as new: *C. propinqua* subsp. *maranoa* Kellermann & Udovicic and *C. speciosa* subsp. *strigosa* Kellermann & Udovicic. The recently named taxon *C. rigida* A.R. Bean is reduced to synonymy under *C. propinqua* var. *propinqua*. Descriptions, illustrations of flowers and distribution maps are provided for each taxon. A lectotype is designated for *C. magniflora*.

Och, D.J., Percival, I.G. and Leitch, E.C. (2007). Ordovician conodonts from the Watonga Formation, Port Macquarie, northeast New South Wales. *Proceedings of the Linnean Society of New South Wales* **128**, 209-216.

Conodonts of Middle to Late Ordovician age, obtained from cherts of the Watonga Formation exposed in the Port Macquarie Block of the Mid North Coast region of New South Wales, establish this unit as the oldest biostratigraphically-dated part of the southern New England Fold Belt subduction-accretion complex. Correlation of the Watonga Formation with the Woolomin Formation, faunas from which are no older than Pridoli, cannot be sustained. This revised age provides evidence of possible early Palaeozoic subduction-accretion in this region at the same time as arc magmatism, volcanoclastic sedimentation and exhumation of high-pressure metamorphic rocks were proceeding further west.

Percival, I.G. and Engelbretsen, M.J. 2007. Early Ordovician Lingulate Brachiopods from New South Wales. *Proceedings of the Linnean Society of New South Wales* **128**, 223-242.

Lingulate brachiopods from the Lower Ordovician (lower *Oepikodus evae* conodont zone) Rowena Formation in the far west of New South Wales are revised, and determined as *Hyperobolus mootwingiensis* (Fletcher, 1964), *Lingulobolus gnaltaensis* (Fletcher, 1964), and the new genus *Rowenaglossa*, with type species *R. brunnschweileri* (Fletcher, 1964). Specimens possibly conspecific with *Lingulobolus gnaltaensis* are illustrated from Pine Gap, near Alice Springs, Northern Territory. In central western NSW, Early Ordovician (Lancefieldian-Bendigonian) brachiopods are represented in the Yarrimbah Formation of the Parkes region by the new species *Palaeoglossa yarrimbahensis*, a probable zhanatellid and an indeterminate acrotretide. Allochthonous limestones in the Hensleigh Siltstone, south of Wellington, of slightly younger (Bendigonian) age, yield *Otariconulus* sp. cf. *O. intermedia* and an unnamed new ephippelasmaticid. Although broadly contemporaneous, the lingulid brachiopods documented in this paper lived in contrasting environmental settings. Those from the Koonenberry Belt in the far west inhabited nearshore predominantly sandy substrates, whereas faunas from central western NSW lived in deeper water outer shelf and slope to basinal environments flanking the Macquarie Arc.

Robbie, A. and Martin, H.A. (2007). The history of the vegetation from the last glacial maximum at Mountain Lagoon, Blue Mountains, New South Wales. *Proceedings of the Linnean Society of New South Wales* **128**, 57-80.

Mountain Lagoon in the Blue Mountains west of Sydney provides a sedimentary record of 23,000 years, thereby including the Last Glacial Maximum. Initially, the site was a lake where clay was being deposited and the vegetation was probably shrubland/herbfields. About 18-19 kyr, the lake became shallow enough for sedgeland and peat formation. At this time, pollen concentrations were high and both Casuarinaceae and Myrtaceae are prominent. In the early Holocene, about 10 kyr, the swamp became a lake again, perhaps because of some minor movement of the fault-line which could have caused a burst of accelerated erosion and clay deposition. The lake surface was re-colonized by the sedgeland again about 7-8 kyr, when the vegetation was woodland/forest.

The vegetation surrounding the site was sclerophyllous throughout the last 23 kyr, as would be expected on these low nutrient soils. In contrast to the likely marked climatic changes during this period, the pollen spectra show remarkably little change in the major taxa. However, variations of some of the Myrtaceae pollen show that there were species changes, although some taxa were present the whole time. Casuarinaceae was prominent throughout and did not decline until European settlement.

Rose, S. and Martin, H.A. (2006). The vegetation history of the Holocene at Dry Lake, Thirlmere, New South Wales. *Proceedings of the Linnean Society of New South Wales* **128**, 15-56.

At the beginning of the Holocene, Dry Lake was a lake, with a fringe of cyperaceous reeds. *Eucalyptus* and *Allocasuarina* were the dominant trees and Asteraceae Tubuliflorae were prominent in the understorey. Between 8 ka and 2 ka, the lake became shallower, and the reeds grew over the surface of the developing swamp, forming peat. An hiatus in peat deposition between 5 ka and 2ka was followed by the formation of a thin layer of diatomite. Eutrophic conditions would be required to allow large populations of diatoms and burning seems the most likely way of increasing the nutrient mobility on the poor sandstone soils of the catchment.

By 2 ka, the lake had become a peat swamp. *Angophora/Corymbia* pollen had increased dramatically, most likely representing *Angophora* on these alluvial flats. The shrub layer had also become more diverse. *Allocasuarina* did not decrease through the Holocene, unlike the record of many other Holocene sites. The likely reasons for this difference are probably related to site-specific environmental conditions. With European settlement, all trees decreased dramatically and grasses increased. Today, Dry Lake only contains water in exceptionally wet periods.

Semple, W.S. and Koen, T.B. (2007). Observations of insect damage to leaves of woodland eucalypts on the central western slopes of New South Wales: 1990-2004. *Proceedings of the Linnean Society of New South Wales* **128**, 99-110.

Damage to leaves of ~680 eucalypt trees at 17 paired sites, distributed across three soil landscapes near Molong and Manildra (NSW), was monitored each autumn from 1990 to 2004. Insect damage was assessed by estimating the proportion of damaged leaves on each tree. Across all species and sites, and for most of the time, mean damage fluctuated between 10 and 25 % of leaves obviously damaged. Higher values (>30 % of leaves damaged) were recorded in 1990 and 1994, which coincided with increased abundance of Scarabeidae. After c.1995 abundance of Scarabeidae declined and most leaf damage was due to feeding by other insects. Relative damage levels to individual species changed over time and for *Eucalyptus albens* and *E. melliodora* was associated with the soil landscape in which the trees occurred. When Scarabeidae were active, *E. albens* and/or *E. blakelyi-dealbata* showed higher leaf damage than *E. bridgesiana*, *E. microcarpa* and *E. melliodora* although the last mentioned was damaged by insects other than Scarabeidae during this period. Leaf damage across all trees and times was negatively correlated with warm season rainfall 4 years previously. Contrary to expectations, most individual trees did not experience severe leaf damage in consecutive years.

Todarello, P. and Chalmers, A. (2006). The characteristics of five species of hollow-bearing trees on the New South Wales central coast. *Proceedings of the Linnean Society of New South Wales* **128**, 1-14.

Five native eucalypt species were examined to investigate the abundance, entrance size diameter and type (e.g. trunk, branch) of hollows present. A total of 698 living trees were sampled within 22 one hectare plots. The trees were distributed across five open forest or woodland communities on the Central Coast of NSW; these communities were underlain by Narrabeen or Hawkesbury sandstone. The number of hollows per tree was positively correlated with the diameter of the tree and, with the exception of *Corymbia gummifera*, with the height of the tree. The smallest species examined, *Eucalyptus haemastoma*, contained a high proportion (60%) of small diameter (20-35 cm) hollow-bearing trees, confirming that hollow availability is more strongly related to species characteristics rather than to absolute diameter. *Eucalyptus haemastoma* had the highest proportion of hollow-bearing trees (78%) followed by *Angophora costata* (40%), *Eucalyptus punctata* (26%), *C. gummifera* (24%) and *Eucalyptus pilularis* (22%). The results obtained for *E. pilularis* may not be a true reflection of the propensity of this species to form hollows, as the sampled population may have been affected by timber removal. Most hollows had small (2-5 cm) diameter entrances (47%) and occurred in branches (84%) rather than in main stems (16%).

Williams, M.C. and Wardle, G.M. (2007). The spatial pattern of invading *Pinus radiata*. *Proceedings of the Linnean Society of New South Wales* **128**, 111-122.

The spatial pattern of invading populations can provide insight into mechanisms of invasion and help establish the potential for further spread of a species. *Pinus radiata* has successfully invaded native vegetation across southeastern Australia. The small scale spatial pattern of invading *Pinus radiata* was investigated within two dry Eucalypt woodlands adjacent to commercial plantations in the upper Blue Mountains, NSW Australia. This study aimed to identify the presence of a second generation of pines in order to determine the sustainability of the invading population. We looked for evidence of 1) clustering of pine seedlings; 2) positive associations between pine seedlings and

reproductive pines. Spatial analysis of 20 m by 20 m plots using dispersion indices and Ripley's K function revealed clustering of pine seedlings at distances of up to 450 m from the plantation. Bivariate analysis found significant positive association between seedlings and reproductive pines in two plots. Further evidence for self propagation was provided by the correlation between seedling abundance and cone abundance. These results suggest that the invading population is sustainable in the long term and is capable of spreading further into the native vegetation.

Zhen, Y.Y. (2007). Revision of *Microplasma parallelum* Etheridge, 1899 (Cnidaria: Rugosa) from the Middle Devonian Moore Creek Limestone of New South Wales. *Proceedings of the Linnean Society of New South Wales* **128**, 201=208.

The holotype and sole known specimen of the rugosan coral *Microplasma parallelum* Etheridge, 1899 is reassessed. This phaceloid species with only sporadic occurrence of isolated dissepiments or presepiments is here selected as type species of the new subgenus *Loyolophyllum* (*Fasciloyolophyllum*), which is erected to accommodate phaceloid species otherwise resembling *Loyolophyllum* (*Loyolophyllum*). Two other species previously referred to *Fasciphyllum*, from the Devonian of China, are also ascribed to this new subgenus. Review of the concept of *Loyolophyllum sensu stricto* leads to a reappraisal of those species assigned to it.