

# Current status of species-level representation in faunas from selected fossil localities in the Riversleigh World Heritage Area, northwestern Queensland

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Current lists of species-level representation in faunas from 80 Cenozoic fossil localities at the Riversleigh World Heritage Area have been compiled by review of recorded occurrences of taxa obtained from both published and unpublished sources. More than 290 species-level taxa are represented, comprising mammals, amphibians, reptiles, birds, fishes, molluscs and crustaceans. The data are presented for the purpose of ongoing palaeoecological and biochronological studies.

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FOSSIL faunas have been collected from more than 200 localities at Riversleigh and have been the subject of research efforts during the last 40 years (Archer *et al.* 1989, 1994, 1997). Ongoing fieldwork and exploration continues to identify an increasing number of additional fossil occurrences that have not yet been sampled, and the vertical and lateral extents of potentially fossiliferous deposits in the area are not yet fully understood.

The Riversleigh Tertiary carbonate deposits occur adjacent to, within and upon Proterozoic siliclastics and Cambrian marine limestone and

chert deposits that form the northeastern edge of the Barkly Tableland in northwestern Queensland. The depositional history of these deposits appears to involve a complex sequence of fluvial and karst processes (Megirian 1992, Archer *et al.* 1989, 1994, 1997; Arena 2005). Faunas from these deposits are considered to range in age from the late Oligocene to early late Miocene (Archer *et al.* 1989, 1994, 1997). Fossil deposits at Riversleigh are also known to occur as infills within Cambrian limestone deposits (Rackham's Roost Site, Pliocene), Pleistocene alluvial terraces (Terrace Site) along the Gregory River, and in active caves in the area (Carrington's

Cave and Message Stick Cave, both Holocene).

Generic and species-level systematics follows that used by authors contributing to Archer *et al.* (1999) or that used by the author of the species name. Fossil material used for the compilation of these faunal lists is on loan from the Queensland Museum.

## Methods

The relationships between fossil taxa and source localities at Riversleigh were obtained from all available literature. Additional unpublished data were obtained for further taxa that are currently under study and have not yet been formally described.

Whereas a great number of specimens collected from Riversleigh has been identified to the level of family and genus, only taxa identified to species-level have been included in the faunal lists presented here. Taxa identified as being distinct at species-level but not named as species are referred to as 'sp.'. Taxa that are currently under study and have not yet been formally described in published literature are referred to as 'sp 1', 'sp 2', etc. References to unpublished taxa in these faunal lists are not intended to constitute or pre-empt formal descriptions of these taxa.

Each fossil-bearing locality at Riversleigh is identified by a unique name and referred to as a 'Site'. Each site yields a distinct local fauna. The fauna from Microsite has also been referred to as the Nooraleeba Local Fauna (Archer & Hand 1984), the fauna from Gag Site as the Dwornamor Local Fauna (Archer & Hand 1984), and the fauna collected from Sites A, B (= BMR Locality M103 and Sample Q11 locality of McMichael [1968]), C, D, E, G, H and locality Q12 of McMichael (1968) has been referred to as the Riversleigh Local Fauna (Tedford 1967, Stirton *et al.* 1968, Flannery *et al.* 1982, Archer *et al.* 1994). Locality names and their abbreviations used in this work are listed in Table 1.

## Results

Monotremes are represented by only one family

(Ornithorhynchidae) and a single species *Obdurodon dicksoni*. Altogether, 159 species of marsupials representing five orders are present, comprising two families of Dasyuromorphia (Thylacinidae, 9; Dasyuridae, 8 taxa; 3 taxa not allocated to a family); one family of Notoryctemorphia (Notoryctidae, 1 taxon); two families of Peramelemorphia (Peramelidae, 2 taxa; Yaralidae, 1; 9 taxa not allocated to a family); 18 families of Diprotodontia (Phascolarctidae, 6 taxa; Thylacoleonidae, 5; Vombatidae, 4; Ilariidae, 1; Wynyardiidae, 4; Palorchestidae, 6; Diprotodontidae, 10; Maradidae, 1; Burramyidae, 2; Pseudocheiridae, 20; Pilkipildridae, 2; Phalangeridae, 10; Ektopodontidae, 4; Miralinidae, 2; Balbaridae, 20; Hypsiprymnonodontidae, 5; Potoroidae, 2; Macropodidae, 19; one family of Yalkaparidontia (Yalkaparidontidae, 2 taxa); 1 taxon not allocated to a family); and two new genera of marsupials not allocated to order, suborder or family. Placentals comprise 46 species in six families of microchiropteran bats (Megadermatidae, 4 taxa; Hipposideridae, 15; Emballonuridae, 2; Molossidae, 2; Vespertilionidae, 5; Mystacinidae, 2) and one family of rodents (Muridae, 16 taxa). The relationship between the family Yingabalanaridae (1 taxon) and other mammal groups is not clear. Amphibia are represented by 19 species in two families of frogs (Hylidae, 9 taxa; Leptodactylidae, 10). There are 34 species of Reptilia comprising two families of turtles (Chelidae, 5 taxa; Meiolaniidae, 3), five families of lizards (Pygopodidae, 1 taxon; Agamidae, 3; Scincidae, 4; Varanidae, 1; Typhlopidae, 1), three families of snakes (Boidae, 2 taxa; Elapidae, 1; Madtsoiidae, 4) and two subfamilies of crocodylians (Mekosuchinae, 8 taxa; Crocodylinae, 1). Birds are represented by 24 species from fourteen families comprising Casuariidae (1 taxon), Dromornithidae (2 taxa), Ciconiidae (1 taxon), Accipitridae (1 taxon), Rallidae (1 taxon), Cacatuidae (1 taxon), Psittacidae (1 taxon), Apodidae (1 taxon), Halcyonidae (1 taxon), an undetermined family of Passeriformes (4 taxa), Menuridae (1 taxon), Oriolidae (1 taxon), Orthonychidae (1 taxon) and Meliphagidae (7 taxa). A single family of lung

fish (Neoceratodontidae) is represented by 2 taxa. Invertebrates include two families of Gastropoda (Planorbidae, 1 taxon; Camaenidae, 1) and two families of Ostracoda (Limnocytheridae, 1 taxon; Cypridae, 1).

The species-occurrence lists for the Riversleigh localities are shown in Table 2. Each occurrence is represented in the table as a black box. Absence of a species is represented by a blank box.

<b>300BR</b> – 300BR	<b>GG</b> – Gillespie’s Gully	<b>MSC</b> – Message Stick Cave
<b>AA</b> – Archie’s Absence	<b>GLG</b> – Gecko’s Last Gasp	<b>NG</b> – Neville’s Garden
<b>AL</b> – AL	<b>GOH</b> – Gone Over Here	<b>NP</b> – Neville’s Pancake
<b>AL90</b> – AL90	<b>Hel</b> – Helicopter	<b>Out</b> – Outasite
<b>AR</b> – Arachnea Ridge	<b>HH</b> – Henk’s Hollow	<b>Pha</b> – Phalanger
<b>Bite</b> – Bitesantennary	<b>HS</b> – Hiatus Site	<b>PIR</b> – Price Is Right
<b>BO</b> – Burnt Offering	<b>HSS</b> – Hiatus South Site	<b>QL</b> – Quantum Leap
<b>Bob</b> – Bob’s Boulders	<b>Ina</b> – Inabeyance	<b>QQ</b> – Quentin’s Quarry
<b>Boid</b> – Boid	<b>JA</b> – Jeanette’s Amphitheatre	<b>Ring</b> – Ringtail
<b>Boles</b> – Boles’ Bonanza	<b>JC</b> – Jim’s Carousel	<b>Roo</b> – Roo
<b>BR</b> – Bone Reef	<b>JH</b> – Judith’s Horizontalis	<b>RR</b> – Rackham’s Roost
<b>BSE</b> – Boid Site East	<b>JJ</b> – Jaw Junction	<b>RRR</b> – Rick’s Rusty Rocks
<b>CC</b> – Carrington’s Cave	<b>JJJ</b> – Judy’s Jumping Joint	<b>RSO</b> – RSO
<b>CK</b> – Cadbury’s Kingdom	<b>JJS</b> – Jim’s Jaw Site	<b>RV</b> – Rat Vomit
<b>COA</b> – Cleft of Ages	<b>KCB</b> – Keith’s Chocky Block	<b>SB</b> – Sticky Beak
<b>CR</b> – Creaser’s Ramparts	<b>KJ</b> – Kangaroo Jaw	<b>SD</b> – Sue’s Diprotodontid
<b>CS</b> – Camel Sputum	<b>LD94</b> – LD94	<b>TB</b> – Ten Bags
<b>D</b> – D Site	<b>LL</b> – Low Lion	<b>Ter</b> – Terrace
<b>Dome</b> – Dome	<b>LM</b> – Last Minute	<b>TT</b> – Two Trees
<b>DT</b> – Dirk’s Towers	<b>LSO</b> – LSO	<b>U</b> – Upper Site
<b>Dun</b> – Dunsinane	<b>Main</b> – Main	<b>UBO</b> – Upper Burnt Offering
<b>En</b> – Encore	<b>Mel</b> – Melody’s Maze	<b>VD</b> – View Delight
<b>FF</b> – Fireside Favourites	<b>Mesa</b> – Mesa 3	<b>VIP</b> – VIP
<b>FT</b> – Fig Tree	<b>Micro</b> – Microsite	<b>Wang</b> – Wang
<b>G</b> – G Site	<b>MIM</b> – MIM	<b>WH</b> – White Hunter
<b>Gag</b> – Gag	<b>MM</b> – Mike’s Menagerie	<b>WW</b> – Wayne’s Wok
<b>GC</b> – Gotham City	<b>MPP</b> – Mike’s Potato Patch	

Table 1. List of source sites for Riversleigh faunas and their abbreviations used in this work.















## Discussion

The data presented here are a product of the contributions of many workers over several decades to the ongoing cumulative research effort. Because these species lists are based only on the occurrence of taxa identified at species-level and do not include all identified specimens, caution should be exercised in the interpretation of the data in terms of the presence or absence of taxa. Taxa that have been assigned to higher-level groups may not be listed here because specimens have not yet been, or are not able to be, identified beyond the level of genus.

Some differences in relative diversity between faunas may be due to differences in sampling from localities, which can vary in terms of the relative quantities of material that have been collected and/or processed and identified so far. There is additional material from other localities yet to be processed. As such the species lists presented here do not constitute complete faunal lists, but provide current samples of known species-level representation within faunas from selected localities. Meanwhile, this type of data can be used for palaeoecological studies. These data are used by Travouillon *et al.* (in press) to investigate the temporal relationship of each of Riversleigh's Local Faunas and test the Riversleigh "System" biostratigraphic concept introduced by Archer *et al.* (1989).

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Table 2. Species lists for the faunas from 80 Riversleigh sites. Black boxes represent presence of species at the corresponding locality; blank boxes represent absence of species. The numbers attached to the taxon names correspond to references listed in the appendix. [see preceding six pages, 4-9].

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