Fivefold Vision for Munibung Hill

Munibung Hill Conservation Society

September 2018

Supplementary papers – Attachments, References, Notes and Illustrations

Newcastle Astronomical Society (NAS): **Lake Macquarie Stardome, Astronomical Observatory and Planetarium, Concept Plan**

Lake Macquarie Business Ltd: Letter of support

Rotary Club of Warners Bay: Letter of support

University of Newcastle, School of Mathematical and Physical Sciences: Letter of support

(Warners Bay High School) Tobias Husband: Letter of support

Munibung Hill Conservation Society (MHCS), press releases:

The Great Celestial Emu is my favourite Aboriginal constellation says Kirsten Banks

Astrophysicist and Science Communicator visits the Hunter to speak about Indigenous Astronomy

MHCS, Vision 2, Conservation area / Nature reserve, recommendation 5 states: to explain the story of 'nesting':

Nesting as a core ecological principle

ARIES, Macquarie University **Habitat Stepping Stones**. The program provides an innovative approach to encourage people to improve urban biodiversity. http://www.habitatsteppingstones.org.au/

Georgie Burgess: **Heavens above! July is the perfect month to appreciate the night sky,** ABC Radio Hobart. 8.7.2018 http://www.abc.net.au/news/2018-07-18/july-makes-perfect-conditions-for-stargazing/10003756?section=good-news

Centre for Science Education, University Corporation for Atmospheric Research (UCAR): The geosphere includes the rocks and minerals on Earth – from the molten rock and heavy metals in the deep interior of the planet to the sand on beaches and peaks of mountains. The geosphere also includes the abiotic (non-living) parts of soils, and the skeletons of animals that may become fossilised over geologic time. Beyond these parts, the geosphere is about processes. The processes of the rock cycle such as metamorphism, melting and solidification, weathering, erosion, deposition, and burial are responsible for a constant recycling of rocks on Earth between sedimentary, igneous, and metamorphic states. https://scied.ucar.edu/shortcontent/geosphere (*See reference at MHCS Editors Note below)

Helen Davidson at Madjedbebe and Calla Wahlquist: **Australian dig finds evidence of Aboriginal habitation up to 80,000 years ago**. The Guardian. Thu 20 Jul 2017 Artefacts in Kakadu national park have been dated between 65,000 and 80,000 years old, extending likely occupation of the area by thousands of years, https://www.theguardian.com/australia-news/2017/jul/19/dig-finds-evidence-of-aboriginal-habitation-up-to-80000-years-ago

Folke Gunther[1] and Carl Folke[2], **Characteristics of Nested Living Systems**, [1]Department of Systems Ecology Stockholm University, Sweden [2]The Beijer International Institute of Ecological Economics The Royal Swedish Academy of Sciences, Stockholm, Sweden, *Journal of Biological Systems*,1:3, 1993, pp.257-274

Kenneth McLeod, (Anthropocene Transitions Program): **The Anthropocene and why it matters.** Presented to WSU Social Ecology students 11th July 2018

LMCC: **Large Forest Owl Planning and Management Guidelines**, 2014 (see note below)

LMCC: **Squirrel Glider Planning and Management Guidelines**, 2015 (see note below)

Medibank, Live Better: **Can urban greening make us happier and healthier**? How can more city-greenery improve our lives? Professor Richard Fuller explains. 2nd November 2016

Beth Mott: **Powerful Owl Project Officer**, Birdlife Australia 7.8.2018: In summary, the aims of the project are:

1. To provide a greater understanding of the ecology of an urban Powerful Owl population, including: breeding behaviour and success; diet; habitat characteristics at the local and landscape scale; and mortality and injury rates (and causes)
2. To engage the community in the conservation of Powerful Owls and their habitat through education, training, and supporting them in collecting ecological data.

LMCC involved in a major study in 2014, with records kept of Owl movements. Sightings within the Munibung Hill vicinity include a breeding pair 3.6km to the east, and another breeding pair 4.0km to the north-east, two other pairs 3.9km to the west. There are 4 species of Owl all threatened. We need to build action plans from the ground up. Owls are a keystone or 'flagship' species. Being at the top of the predator pyramid they are dependent on the health of the habitat for survival. They are very valuable for control of small herbivores. When we lose these birds there is a terrible imbalance that creates a knock on effect. Maude Street, Cardiff South, green corridor is very important, especially for extending range for movement. Stepping stones at regular intervals are vital.

See: http://birdlife.org.au/projects/powerful-owl-project

Tony Robinson: **Britain's Ancient Tracks,** Ep. 3, **North Downs Way.** Tony visits one of Britain's oldest oak trees and the shrine of Thomas Becket, uncovers a lost battle site of Julius Caesar and marvels at the discoveries of Darwin, on the North Downs Way in Kent.

Brigid Schulte: **How Charles Darwin used rest to be more productive — and how you can, too.** Washington Post, 13.4.2015

What if the most productive and creative work gets done when we also take what author, consultant and futurist Alex Pang calls "serious rest?" He explains: When I was writing *The Distraction Addiction*, I had a chapter about digital Sabbaths, restorative practices, the things people do as a

way of recovering some balance in their lives with their digital existences. In the course of that, I was looking at the life of Charles Darwin, and his daily practice of taking long walks on what he called his "thinking path."

This was a man who was arguably the most important scientist of the last 300 years. He published a dozen books. He's still read by lots of active scientists. But when you look at his daily schedule, you see he worked – conducting experiments, doing things a university committee or project leader would recognize as labour – about four hours a day.

Barbara Schaffer: **Green Visions: Nature as infrastructure,** Landscape Australia. May 2016

A number of recent industry campaigns and major policy documents from both state and local government levels promote nature's critical role in supporting economic prosperity, health and wellbeing. ….. A vital contribution to the sustainable development of the city, **the Green Grid** formulates a framework for the enhancement and integration of open space throughout metropolitan Sydney. ….

What is inspiring to see is how state, local and non-government organisations within Australia are acknowledging the role of **green infrastructure** in addressing the challenges of the twenty-first century. The benefits apply to business, landowners, authorities, retailers, city dwellers, tourists and developers. Nature as infrastructure is proving to be more cost effective, more resilient and eminently capable of providing a range of benefits – health and wellbeing, productivity, community connection, local commerce, cooler cities, better water management and cleaner air.

Sydney Environment Institute, University of Sydney: **Understanding Australia in the Age of Humans,** July 2017

[MHCS Editors note: For the vast majority of people, scant attention is given to the complexities held within geological and geomorphological formations and how we have arrived at this era known as the Anthropocene. Although the Anthropocene is hardly mentioned its effects are widely felt. An area like Munibung Hill provides us with a benchmark from which to get some clues of the scale of our impact and the extinctions that have taken place on our watch. These are often incremental and cumulative. And so nesting as mentioned elsewhere in this report comes into sharper focus. It is a graphic way of reminding us of our place within the greater whole that is the geosphere* demonstrating our total dependence on and need for healthy operating systems that when functioning according to the basic laws of thermodynamics are regenerative and an example of earth law in practice.]

ABC TV1 Catalyst: **The Anthropocene** Series 17 : Scientists claim that the Earth has shifted out of the Holocene state & into a new epoch. November 15, 2016 including transcript: http://www.abc.net.au/catalyst/stories/4574615.htm

Damon Young: **Charles Darwin Had A Fascinating Outlook On Daily Exercise**, Jan 4, 2015, Business Insider Australia. https://www.businessinsider.com.au/how-to-think-about-exercise-2015-1

'Darwin's walks were also an exercise in reflection — a kind of moving meditation. This enriched his scientific work, and gratified his constant curiosity. Walks, wrote his plain-speaking son, were for Darwin's 'hard thinking'.

Large Forest Owl Planning and Management Guidelines, 2014

6. Planning and Management Issues: Approximately 5,238 ha (i.e. 13%) of potential habitat within Lake Macquarie LGA is likely to be subject to development pressure to 2030. …… Given the proposed location of future urban development, large forest owl conservation planning and management issues are expected to arise. (page 21)

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7.1 Objectives: Objectives for planning and managing large forest owl habitat within Lake Macquarie LGA include to: • Maintain viable local populations of all four species of large forest owls across their existing distribution within the Lake Macquarie LGA (i.e. including retention of all confirmed nest sites within the Lake Macquarie LGA and sufficient adjoining foraging habitat to maintain their viability in the long term); • Apply consistent field survey methods across the LGA; • Improve their conservation status within the LGA by prioritising the following conservation priority habitat for protection in reserves: - Confirmed nest sites (i.e. confirmed nest and breeding roost trees) and sustainable home range extant habitat around such sites; - Riparian habitat; - Corridor connectivity along riparian corridors and between major habitat fragments; and - Old growth forest; • Identify important large forest owl habitat where no clearing is acceptable. (page 24)

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9. Conclusion: These Interim Planning and Management Guidelines outline current knowledge of the biology and ecology of large forest owls within the Lake Macquarie LGA and are intended to inform decision-making in relation to the species within the LGA. These Guidelines identify requirements for the conservation of the species in the long term, and aim to provide improved certainty for development within the LGA. Large forest owl habitat within the Lake Macquarie LGA is expected to be subject to significant future development pressure. These Guidelines outline the possible scale of these impacts and conservation measures that are available based on current knowledge of the species and known potential development. (page 30)

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Squirrel Glider Planning and Management Guidelines, 2015

Executive Summary: A strategic review of long term land use within the Lake Macquarie LGA indicates that around 24% of likely squirrel glider habitat has the potential to be affected by development to 2030. Only around 8% of likely habitat is protected in conservation reserves. (page 5)
