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From:
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26 August 2020

Additional SRE sampling at Lake Way – memo immediately after fieldwork

In April 2020, Bennelongia provided an appraisal of conservation values pertaining to short range endemic (SRE) terrestrial invertebrates at Lake Way and surrounding habitats. An additional five-day field survey was conducted between the 17th and 21st of August 2020, initially targeting 12 sites with gypsum-rich soils and areas within the predicted extent of ≥2 m drawdown. Two additional sites were later included, in order to further investigate the distribution and abundance of salt lake specialist beetles collected in the first sampling round. The survey used active search techniques including searching for and excavating representative burrows, peeling bark, foraging under debris, beating low vegetation and sieving soil and litter. This short memo focuses on the salt lake specialist beetles. Here we present some of the preliminary results obtained in this second round of the survey.

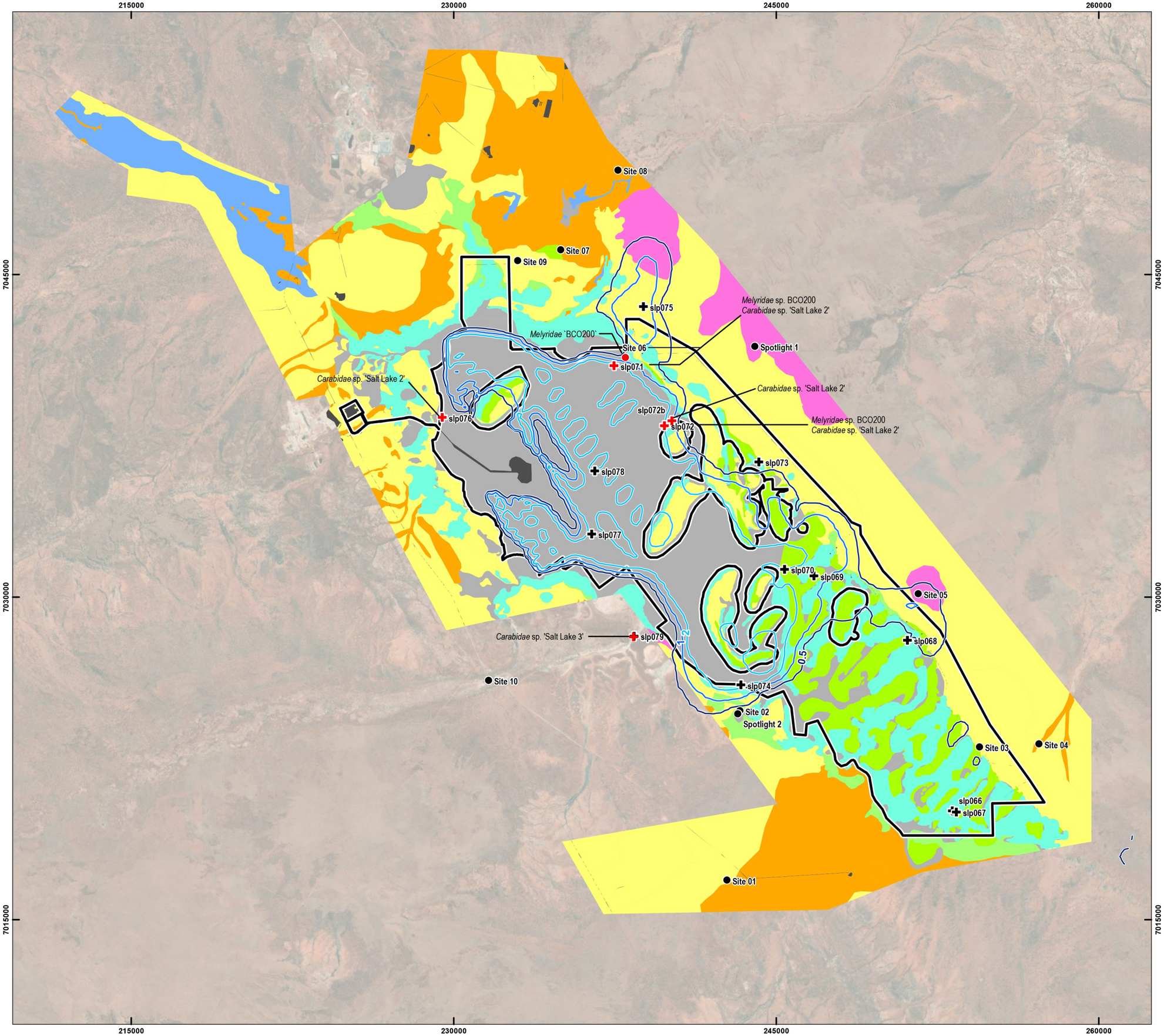
Salt lake specialist beetles (including the new species Melyridae sp. BCO200)

The first survey collected three species of beetle considered to be salt lake specialists: *Pseudotetracha corpulenta*, *P. helmsi* and Melyride sp. BCO200. Seeking further information on Melyride sp. BCO200, a total of 16 specimens of small salt lake specialist beetles were collected in shallow burrows on five different sites on saline playa habitat (and an associated tributary) in the second round of sampling. The abundance of these beetles varied across sites from completely absent (for example in sites **SLP074**, **SLP077** and **SLP078**; see Figure 1) to 240 individuals/hectare (site **SLP076**; estimated from the average density obtained from ten 100 m^2 quadrats). These beetles are small (6-8 mm long) and of similar general morphology and coloration, and in the field we suspected that there might be two different species in the samples. Morphological comparisons under the microscope revealed that the individuals found are actually from three different species, the first one being the same that was found in the first round of the survey (Melyridae sp. BCO200), and the other two being potentially two new species of salt lake specialist carabids (Carabidae sp. 'Salt Lake 2' and Carabidae sp. 'Salt Lake 3'). The specimens were found at the locations shown in Figure 1.

Melyridae sp. BCO200: 1 Male collected at **SLP071** and four individuals (2 males; 2 females) collected at **SLP072a**. These animals are the same species as previously found in **Site 06**, and the new collections expand its range to approximately 3.7 km, always closely associated with the saline playa habitat. Moreover, this species was only found in sites in the northern parts of the lake, where the soil was finer and wetter than in the southern sites. This species has been recorded in areas within and outside predicted drawdown greater than 2m.

Carabidae sp. 'Salt Lake 2': 1 Individual collected at **SLP071**; 1 individual collected at **SLP072a**; 1 individual collected at **SLP072b**; and 5 individuals collected at **SLP076**. This species was not collected in the previous survey, but it seems more abundant and more widespread within Lake Way than Melyridae sp. BCO200, being present at more sites and at sites more than 10 km apart. This species was also only found in close association to the saline playa habitat, and again only in sites in the northern parts of the lake, where the soil was finer and wetter than in the southern sites. This species was also collected from sites inside and outside the predicted area of greater than 2m drawdown.

Carabidae sp. 'Salt Lake 3': 2 individuals collected at **SLP079**. This species was only found at one site, in the dried bed of a tributary (Abercrombie Creek) that connects to the west boundary of Lake Way. This site is outside any predicted drawdown associated with the Project and slightly removed from the main saline playa, suggesting that this new species should not be under direct threat from development.



0 Kilometres 5

1:170,000 @ A3

GDA 1994 MGA Zone 51

Lake Way

Figure 1
SRE Habitat and Sample Sites

Legend

- Development Envelope
- Survey Locations (Bennelongia Environmental Consultants, 2020) no Salt Lake Beetles Found
- Survey Locations (Bennelongia Environmental Consultants, 2020) Salt Lake Beetles Found
- Additional Survey Locations (Bennelongia, 2020) no Salt Lake Beetles Found
- Additional Survey Locations (Bennelongia, 2020) Salt Lake Beetles Found

Drawdown Contour (m)

- 0.5 m
- 1.0 m
- 2.0 m

SRE Habitat Type

- Callitris on red sand dunes
- Eucalyptus camaldulensis in drainage lines
- Low chenopod shrubland on shores and depressions
- Melaleuca tall shrubland or low woodland
- Mixed low woodland on gypsum dunes and islands
- Mulga with shrubland and some mallee on plains
- Mulga with shrubland on floodplains and drainage
- Bare Playa
- Cleared

SALT LAKE POTASH LTD

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