

The chance discovery of a male spider belonging to the family Migidae in the collection of the Western Australian Museum over 25 years ago started a project that culminated last December highlighting how valuable museum and herbarium collections are to biodiversity science. Avid collectors Stewart Peck and Jamila Kukalova-Peck visited south Western Australia in 1980 to collect insects – mainly beetles. They used a malaise trap, which resembles a two-person tent that is open on all sides to allow flying and crawling insects inside, where they meet their doom – a bottle of preservative. When Stewart and Jamila brought their samples back to Perth to sort, they allowed the curatorial staff of the Museum to look through the samples to pick out arachnids and myriapods. One of these spiders was identified as a migid spider in 1989 by Dr Valerie Todd-Davies, former Curator of Arachnids at the Queensland Museum and shown to Dr Barbara York Main, Western Australia's doyen of trapdoor spiders. Initially Barbara was amazed that a male migid had been collected in this way, and with her husband Bert, rushed down to the tingle forest where they located active populations on the trunks of tingle trees and in the soil.

Migid trapdoor spiders have a classic Gondwanan distribution, with species occurring in eastern Australia, New Zealand, New Caledonia, temperate South America, Madagascar and sub-Saharan Africa. Barbara identified the south-western species as a member of the genus *Moggridgea*, which was widespread in the African region, with many named species. She published her paper describing the species – which she named *Moggridgea tingle* after her beloved tingle forests in the Walpole region. In the same paper she described *Moggridgea australis* from Kangaroo Island, South Australia, based on specimens in the South Australian Museum.

Barbara and Bert quickly located further populations of *Moggridgea* in Stirling Range National Park, and staff from the Western Australian Museum found some in Porongurup National Park. During the 1990s, Barbara nominated *Moggridgea*



Pygmy trapdoor spiders – *Bertmainius*

tingle and the undescribed species from the Stirlings as threatened species due to their extremely small ranges and threats from bushfires.

Surveys to locate the extent of the populations of both listed species to help ascertain their conservation status located numerous new populations over the high-rainfall zone of south-western Australia. But it was quickly becoming obvious that there were more than two species involved. Samples collected from these surveys were sent to Dr Steven Cooper at the South Australian Museum, who used molecular sequence data to help sort out how many species were involved and their relationships. This study – along with the morphology of the few adult males that had been collected – showed that there were seven distinct species in Western Australia. Wow, what a result.

Another surprise was the relationships of the WA species, which were compared with DNA samples of *Moggridgea australis* from Kangaroo Island and several species of 'real' *Moggridgea* from South Africa. The seven WA species were found to be on a very separate evolutionary path to the African and Kangaroo Island species. Indeed, this matched the morphology of both males and females, and eventually

Above A male *Bertmainius monachus* – one of seven *Bertmainius* species.
Photo – Mark Harvey

concluded that the WA species should be placed in a new genus. The paper, written by myself, Barbara York Main, Mike Rix and Steve Cooper, was published in December 2015 in the journal *Invertebrate Systematics*, and the new genus was named *Bertmainius*, after Barbara's late husband Albert (Bert) Russell Main (1919–2009) in recognition of his remarkable contributions to science and the conservation of the Australian biota.

Conservation assessments of each of the seven species of *Bertmainius* have concluded that all are most likely threatened, especially those that have very small distributions. For example, *Bertmainius pandus* is currently known from a single gully in the Stirling Ranges, and needs all the conservation help it can get. Indeed, Parks and Wildlife staff have previously managed fires in the Stirling Range National Park to try to avoid *Bertmainius* habitat, possibly making this the only place in the world where fire management has been used to conserve a spider. Bert would have been proud of this.