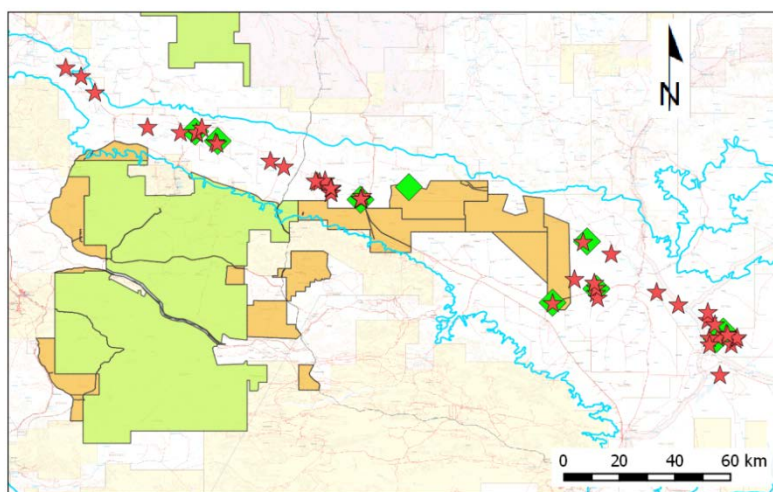


## Clay-rich landscapes mould unique wetland assemblages in the Pilbara's Fortescue Valley

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### Background

The Pilbara Biological Survey found that floodplain wetlands support distinct flora and fauna in the Pilbara but are poorly represented in the conservation estate. Some of these floodplain wetlands occur along the coastal plain and other areas of low relief in the Pilbara, but they are particularly



Above: Map of the middle to upper Fortescue Valley showing locations of wetlands sampled for this project (red stars) and for the Pilbara Biological Survey (green diamonds). Green areas are Conservation Estate. Orange areas are pastoral lease exclusions. The Fortescue subregion is outlined in blue.

common and diverse in the Fortescue Valley upstream and downstream of Fortescue Marsh. Fortescue Marsh is recognised as a nationally important wetland and the larger claypans on Mulga Downs Station are Priority Ecological Communities. Recent conservation planning processes have further highlighted Fortescue Valley wetlands as important biodiversity assets and noted the need for further surveys of wetland flora and fauna and the management of stock and feral animals, amongst other actions.

but sampling intensity was too coarse to inform local scale wetland management planning within the Fortescue Valley. To address this, the Pilbara Corridors Project funded a survey of wetland flora and fauna in this region to inform spatially efficient wetland conservation planning. Between 2015 and 2017, aquatic and fringing flora, aquatic invertebrates, and associated environmental attributes were surveyed at 47 wetland sites between Mt Florence and Balfour Downs Stations (see map).

The Pilbara Biological Survey identified regional patterns in the distribution of wetland biodiversity



Above: Mungthannannie Pool (left), a claypan on the Jigalong/Upper Fortescue Floodplain (middle) and Powellinna Pool (right) with heavily trampled and grazed fringe.

### Findings

About 590 invertebrate species and 284 flora species were collected between this project and sites sampled for the Pilbara Biological Survey in the same area, representing about 50% of the

invertebrates and 60% of the wetland flora of the Pilbara. Numerous invertebrates and some flora species appear to be more common in the Fortescue Valley than in the rest of the Pilbara, probably reflecting the greater representation of turbid and/or intermittent wetlands in the valley. Some species represent notable range extensions or first records for the Pilbara or the state and ten of the flora species are on the Priority Flora list.

Several patterns were identified in the distribution of wetland biodiversity:

- Significant differences were observed in biotic composition between river pools, *Eriachne* grasslands, Mulga Downs claypans, Fortescue Marsh, Roy Hill claypans south of Fortescue Marsh and claypans on the Jigalong Creek/Upper Fortescue floodplain. These patterns are associated with differences in water quality, substrates, geomorphology and hydrology.
- There was greater representation of species characteristic of the Fortescue Valley in the larger claypans on Mulga Downs (such as Mungthannannie and Gnalka Gnoona), claypans on the Jigalong Creek/Upper Fortescue floodplain and Coondiner Pool on Coondiner Creek.
- There was greater heterogeneity of flora among floodplain wetlands than among the riverine sites.
- Weed impacts were not as significant as those observed for some wetlands types (typically larger river pools) surveyed as part of the broader Pilbara Biological Survey.



Above (clockwise from top left): An unidentified freshwater sponge, *Haliplus fortescuensis*, *Ipomoea diamantinensis*, *Mimulus gracilis*.

## Management Implications

- Incorporation of the spatial patterning revealed during this project into conservation programs will maximise the proportion of the area's wetland biodiversity that is protected.
- Conservation actions that include the larger claypans on Mulga Downs Station will protect complexes of different wetland habitats, which together support more species than smaller simpler wetlands. These larger claypans also support much greater numbers and diversity of waterbirds.
- Flora and fauna characteristic of the Fortescue Valley were more likely to occur in these larger claypans, plus claypans on the Jigalong Creek/Fortescue River floodplain and Coondiner Pool.
- Biodiversity patterns in floodplain wetlands reflect temporal and spatial patterns in their connectivity. Effective conservation programs will take this into account by considering suites of interconnected wetlands.
- Fortescue Marsh was not the focus of this project, but our analyses have shown that the marsh supports flora and fauna that are not represented in other wetlands in the valley.
- Priority management actions should include the management of stock and feral animals around selected wetlands, particularly during drier seasons and years when stock congregate on remaining wetlands with water.

Further information: Pinder AM, Lyons MN, Collins M, Lewis L, Quinlan K, Shiel RJ, Coppen R, Thompson F (2017) *Wetland Biodiversity Patterning Along the Middle to Upper Fortescue Valley (Pilbara Region: Western Australia) to Inform Conservation Planning*. Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

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