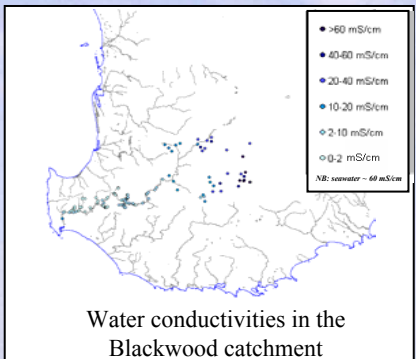
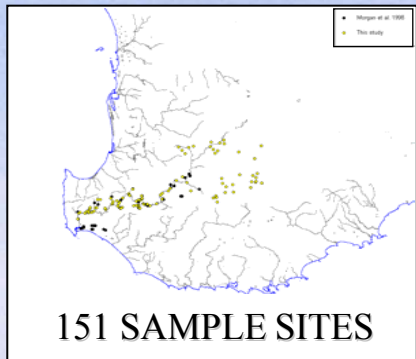


SALINISATION OF THE BLACKWOOD RIVER

IMPACTS ON THE FISH FAUNA



Introduced species of the Blackwood River

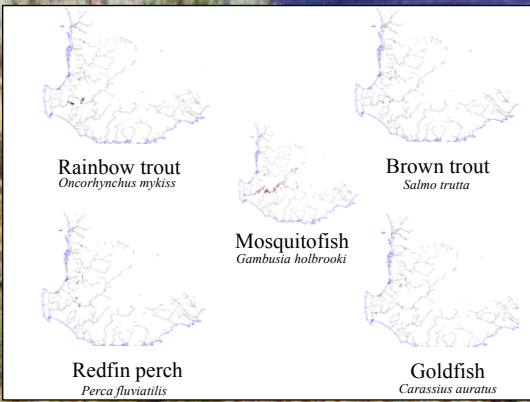
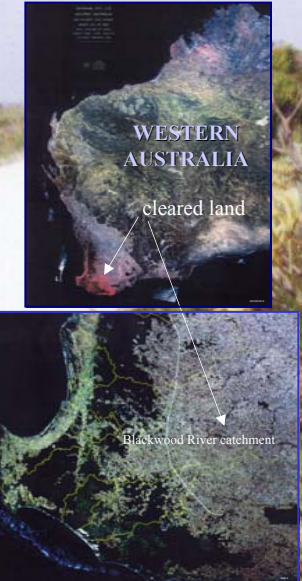


Table 1 The total numbers and corresponding percentages of species captured by electrofishing, and seine and scoop netting in the Blackwood River catchment.

| Species | Number | Percentage |
|-------------------------------|--------------|------------|
| Freshwater endemic | | |
| <i>Galaxias occidentalis</i> | 1542 | 12.1 |
| <i>Galaxiella munda</i> | 14 | 0.1 |
| <i>Edelia vittata</i> | 997 | 7.8 |
| <i>Bostockia porosa</i> | 201 | 1.6 |
| Estuarine | | |
| <i>Lepidatherina wallacei</i> | 3047 | 23.9 |
| <i>Pseudogobius olorum</i> | 213 | 1.7 |
| <i>Mugil cephalus</i> | 6 | <0.1 |
| Introduced | | |
| <i>Oncorhynchus mykiss</i> | 44 | 0.3 |
| <i>Salmo trutta</i> | 1 | <0.1 |
| <i>Perca fluviatilis</i> | 3 | <0.1 |
| <i>Carassius auratus</i> | 2 | <0.1 |
| <i>Gambusia holbrooki</i> | 6689 | 52.4 |
| TOTAL | 12759 | 100 |

Table 2 The total numbers and corresponding percentages of species captured by gill netting in the main channel of the Blackwood River.

| Species | Number | Percentage |
|---------------------------|------------|------------|
| Freshwater endemic | | |
| <i>Galaxias holbrooki</i> | 141 | 79.4 |
| Estuarine | | |
| <i>Lepidatherina</i> | 1 | 0.5 |
| <i>Mugil cephalus</i> | 1 | 0.5 |
| Introduced | | |
| <i>Salmo trutta</i> | 1 | 0.5 |
| <i>Perca fluviatilis</i> | 1 | 0.5 |
| TOTAL | 184 | 100 |

12759 fish were captured in 151 sites in the Blackwood River system using seine nets, electrofishers and scoop nets. The introduced *Gambusia holbrooki* was by far the most abundant, representing over 52% of the total number of fish caught. Other introduced species, *Oncorhynchus mykiss*, *Salmo trutta*, *Perca fluviatilis* and *Carassius auratus* were much less abundant, contributing to less than 1%.

The estuarine *Lepidatherina wallacei* was the next most abundant (24% of all fish caught).

The freshwater endemics represented ~ 22% of all fish captured, with *Galaxias occidentalis* and *Edelia vittata*, comprising ~ 12 and 8%, respectively, while *Bostockia porosa* and *Galaxiella munda* were much less common, contributing to only ~ 2 and 0.1% of all fish captured, respectively. *Galaxiella nigrostriata*, *Lepidogalaxias salamandroides* and *Nannatherina balstoni* were very rare, each being found only in the Scott River catchment.

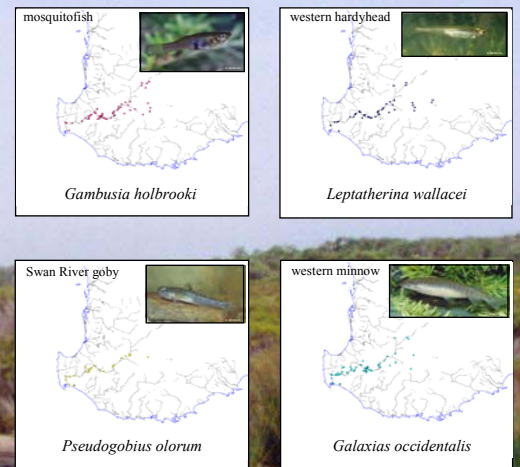
Of the 184 fish captured using gill nets, 95% were the freshwater catfish *Tandanus bostocki*, while only one brown trout *Salmo trutta*, one goldfish *C. auratus* and one sea mullet *Mugil cephalus* were captured.

The unnaturally elevated salinities in the upper reaches of the Blackwood River system appear to have caused a severe decline or even extinction of populations of the salt sensitive endemic teleosts *E. vittata*, *B. porosa* and *G. munda*. Furthermore, the lamprey *Geotria australis*, whose larvae are extremely sensitive to salt, are also absent from the upper reaches of fish system. While the naturally vegetated and low salinity tributaries of the lower reaches of the Blackwood River still contain populations of these species, any large scale land clearing, and thus increases in salinity, in such regions may further destroy the genetic integrity and biodiversity of the river. The fact that the species listed as restricted or vulnerable by the Australian Society for Fish Biology, i.e. *G. munda*, *G. nigrostriata*, *L. salamandroides* and *N. balstoni*, are extremely rare within this system, reflects the implications habitat degradation has had in the entire south-western drainage division.

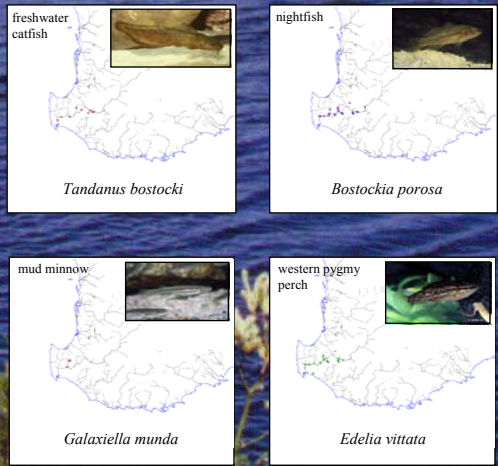
In contrast, the salt tolerant species have flourished throughout the Blackwood, with *L. wallacei*, *G. occidentalis*, *Pseudogobius olorum*, and also the introduced *G. holbrooki* dominating our catches to the extent that, they represented approximately 90% of all fish caught.

Morgan, D.L., Gill, H.S. & Thorburn, H. (1988) Distribution, abundance and biology of freshwater fishes in south-western Australia. *Records of the Western Australian Museum*, Supplement No. 10, Western Australian Museum, Perth.
 Morgan, D., Thorburn, D. & Gill, H. (2000) The distribution and habitat requirements of fish in the Blackwood River catchment. *Report to the Blackwood River Catchment Management Authority*, Perth.
 Thorburn, D.C. (1989) The landward fresh water extension of the Blackwood River catchment. *Report to the Blackwood River Catchment Management Authority*, Perth.

Distribution of salt tolerant species in the Blackwood River



Less-salt tolerant native fish species of the Blackwood River



Native species restricted to specific habitats within the Blackwood

