

# A SURVEY OF THE ESTUARINE BENTHIC FAUNA OF HOMEBUSH BAY, PARRAMATTA RIVER, N.S.W.

K.I.M. ROBINSON

School of Zoology  
University of New South Wales  
Kensington NSW 2033

J.T. VAN DER VELDE

School of Botany  
University of New South Wales  
Kensington NSW 2033

P.J. GIBBS

Fisheries Division  
NSW Department of Agriculture  
211 Kent Street  
Sydney NSW 2000

## INTRODUCTION

It has been suggested that the area surrounding Homebush Bay, which contains extensive mangrove and saltmarsh habitat, be converted into a Bicentennial Park for Sydney. In 1978 the Municipal Councils of Strathfield, Auburn and Concord commissioned a report dealing with this proposal from Macquarie University (Anon., 1978). Although the report covered certain physical and ecological data as well as management proposals, no survey of the estuarine invertebrate fauna was carried out.

This study remedies that situation by reporting on a survey conducted in Homebush Bay by the Coast and Wetlands Society on the 14 November 1982.

## STUDY SITE

Homebush Bay is located 12 kms west of Sydney on the southern side of the Parramatta River. It lies within the Municipalities of Concord in the east, Auburn in the west and Strathfield in the south. Two creeks drain the area, Haslams Creek which flows into the south western corner and Powells Creek which flows from the south. The area proposed for the Bicentennial Park comprises approximately 170 ha and is situated on either side of Powells Creek. Large stands of mangroves occur on either side of the creek. These consist almost entirely of *Avicennia marina*, but some individuals of *Aegiceras corniculatum* also occur.

Areas of saltmarsh plants occur in narrow strips behind the mangroves and an extensive saltmarsh area is found on the western side of the creek, just south of the land presently being reclaimed by the Maritime Services Board (M.S.B.). The most common saltmarsh plants are *Sarcocornia quinqueflora*, *Suaeda australis* and *Samolus repens* with the rush *Juncus kraussii* forming dense stands towards the terrestrial margins and along the base of bunds of embankments. A feature of the upper limit of the marshes is *Wilsonia bakhousei*, a species that is very rare on the New South Wales central coast.

The fully terrestrial areas of the site are largely occupied by introduced weedy species with relatively few native species. A botanical curiosity, which is a particular feature of the site, is the prostrate mat forming succulent *Lampranthus tegens*, looking like a miniature pig-face. Although this species is believed to be a native of South Africa, it was first described from material collected in Australia.

The mangrove habitat is not conducive to invasion by other species. The lower parts of the saltmarsh are similarly free from invasion by exotic species. The upper saltmarsh fringe however, as is the general case in New South Wales, has been invaded by a number of aliens. Most of these upper marsh exotics are relatively small herbs and include species such as *Hydrocotyle bonariensis* and *Aster subulatus* which occur on every marsh around Sydney. Two of the aliens at Homebush Bay are large, aggressive tussock forming species, the sharp rush *Juncus acutus* and pampas grass, *Cortaderia selloana*.

Much of the rest of the area contains dead mangroves (a result of bunding for reclamation), reclaimed parkland areas, a waste-disposal site and the Maritime Services Board 'Lake' reclaimed for industrial sites.

## METHODS AND MATERIALS

Eleven sites were sampled in and around Powells Creek at low tide on the 14 November 1982. They were divided into upstream, middle and downstream sites thus (Fig. 1):

- U1 — at back of mangroves, near saltmarsh
- U2 — at front of mangroves, near creek
- U3 — saltmarsh
- U4 — in small creek that flows into Powells Creek.  
Sandy gravel habitat, with some mangroves present

- M1 - mangrove habitat
- M2 - subtidal creek habitat. Mud habitat
- D1 - mangrove habitat, in bay proper
- D2 - mangrove habitat, end of Powells Creek
- D3 - saltmarsh
- D4 - mangrove habitat
- D5 - saltmarsh.

All sampling was qualitative. Animals were collected and burrows excavated by hand or spade. The subtidal site was sampled by diver-held corer and washed through 1 mm mesh sieve. Fauna were preserved in 10% formalin, returned to the laboratory, sorted and stored in 70% ethanol until identified, as far as possible, to species level.

## RESULTS

Table 1 shows the species and sites at which they were taken during the survey.

Of particular note were:

- i) The high numbers of the brown mussel *Xenostrobus securis* and the pulmonate gastropod *Salinator solida* in mangrove habitat. The latter is also dominant in saltmarsh areas.
- ii) The polychaete worm *Ceratonereis pseudoerythraeensis* was found in a number of mangrove sites, but was very common in the subtidal mud habitat of Powells Creek.
- iii) The marsh crab *Seoarma erythrodactyla* was common in most sites.
- iv) A diverse group of isopods was present.
- v) Although collecting was designed for estuarine aquatic fauna, a variety of terrestrial insects was also taken.

## DISCUSSION

Studies on the benthic macrofauna of mangrove and saltmarsh habitats on the New South Wales central coast have revealed varying diversities that have generally been related to physical factors such as salinity and turbidity. Hutchings and Recher (1974) and Robinson *et al.* (1983) showed high species numbers at Careel Bay, Pittwater and Towra Point, Botany Bay respectively. However, studies in areas subject to lower and more variable salinities have indicated relatively impoverished fauna. Weate (1975) sampled the mangrove and saltmarsh fauna in the lower Myall River and found only 10 molluscs and 4 crustacean species, compared with 4 worms, 7 molluscs and 12 crustaceans at Homebush Bay. Hutchings *et al.* (1977) found 12 molluscs, 11 crustaceans and 4 worms in mangroves at Brooklyn on the Hawkesbury River, and Fullerton Cove in the Hunter River had only 4 molluscs and 8 crustaceans in the mangroves and 7 and 4 respectively in the saltmarsh (Hutchings 1983).

The faunal diversity of Homebush Bay is therefore comparable with other estuarine mangrove and saltmarsh habitats which are subject to variable physical factors. The presence of known brackish water species such as *Xenostrobus securis* and *Leitoeoloplos normalis* suggests relatively low salinities in the area.

Certain species, generally found in similar habitats in other studies, were absent from the Homebush Bay sites. The gastropods *Littorina saxatilis* and *Austrocochlea constricta* were the most notable absentees. The rock oyster *Saccostrea commercialis* would also normally be found in this habitat, but it is possible that the high turbidity of Powells Creek excludes it. It is also possible that the absence of these and other species would be due to runoff of pollutants into the creek. Extensive further studies would be needed to determine this.

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The samples were processed, specimens identified and report written by the authors. Dr Pat Hutchings, Australian Museum, confirmed polychaete identifications. Dr Paul Adam, School of Botany, University of New South Wales, provided information on plant distributions.

TABLE 1

	U1	U2	U3	U4	M1	M2	D1	D2	D3	D4	D5
Phylum Annelida											
<i>Ceratonereis pseudoerythraeensis</i>	X	X		X	X	X					
<i>Neanthes vaalii</i>								X			
<i>Leitoscoloplos normalis</i>										X	
Phylum Nemertinea		X								X	
Phylum Mollusca											
<i>Xenostrobus securis</i>		X			X		X	X		X	
<i>Ophicardelus ornatus</i>	X		X								
<i>O. quoyi</i>	X		X	X			X		X		X
<i>Salinator solida</i>	X	X	X	X	X		X	X	X	X	X
<i>Melosidula zonata</i>				X							
<i>Assimineea tasmanica</i>										X	
<i>Onchidium</i> sp.											X
Phylum Crustacea											
Order Amphipoda											
<i>Orchestia</i> sp.	X		X	X						X	
<i>Melita</i> sp.						X					
Order Isopoda											
<i>Haloniscus</i> sp.	X			X							
<i>Cubaris</i> sp.	X	X		X							
Sphaeromidae sp. 1		X			X						
Sphaeromidae sp. 2		X			X					X	
<i>Apanthura</i> sp.						X					
Order Decapoda											
<i>Sesarma erythroactyla</i>	X	X	X		X		X		X	X	
<i>Paragrapsus laevis</i>		X					X				
<i>Australoplax tridentata</i>							X				
<i>Heloecius cordiformis</i>							X				
Order Cirripedia											
<i>Balanus amphitrite</i>		X					X	X			
Phylum Insecta											
Order Coleoptera											
Scarabaeidae	X										
Cerambycidae		X									
Unknown larvae		X								X	
Order Lepidoptera			X								
Order Diptera											
larva									X		
Phylum Chordata											
Class Pisces											
<i>Mugilogobius paludis</i>		X			X						
unknown larval goby						X					
Class Reptilia											
lizard	X										

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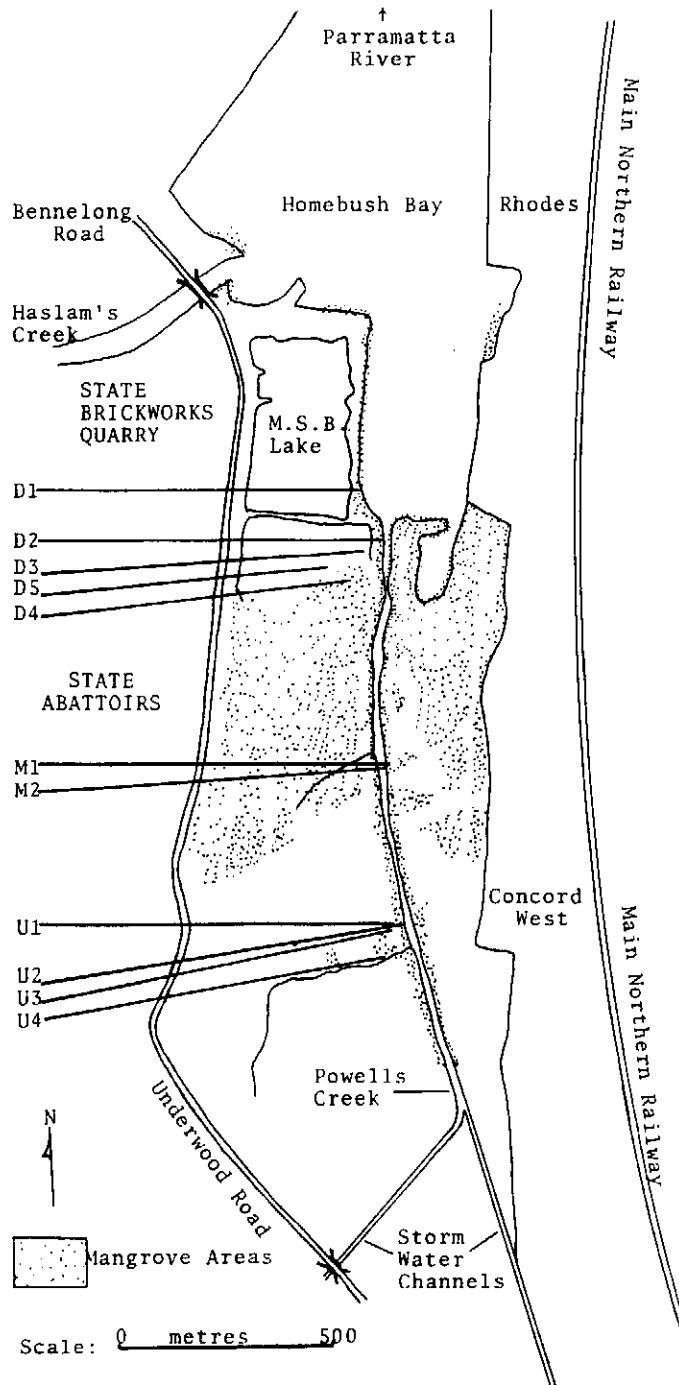


Figure 1: Location Map