

Aquatic fauna survey after the resnagging of a 250 m reach of the Barham River estuary



Several of the snags placed in the Barham River to enhance aquatic habitat

**John McGuckin
Streamline Research Pty. Ltd.**

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EXECUTIVE SUMMARY

This aquatic survey of the trial resnagged reach of the Barham River has found that inserted large woody debris (LWD) provides habitat for estuarine fish and also for platypus. Future resnagging of the deeper saline pools of the estuary could be expected to provide favourable habitat for estuary perch.

Although the insertion of LWD has provided additional habitat to the Barham River estuary, LWD is only one component in the restoration of estuary health. Replanting with native riparian vegetation and the removal of cattle from the estuary floodplain could improve the physical condition of the Barham River estuary surrounds. Water quality could also be improved if faecal material is no longer being washed into the estuary and banks are not being eroded by cattle.

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1.0 INTRODUCTION

As part of the Corangamite CMA estuary restoration program, a trial resnagging of the Barham River estuary was undertaken in June 2005. A total of 16 snags were placed and secured in a 250 m reach of the Barham River estuary, alongside the Barham River Road, Apollo Bay.

The long term objective of resnagging large woody debris (LWD) to the Barham River estuary is to:

- enhance estuary perch and other estuarine faunal species habitat
- enhance recreational fishing opportunities, and to
- improve in-channel diversity and complexity

This investigation, 11 month after the LWD has been placed in the estuary provides an initial assessment of aquatic fauna colonisation in the trial resnagged reach. It also provides a clearer understanding of the salinity conditions within the estuary and the need for LWD insertion to the deeper pools of the estuary to maximise potential benefit for estuary perch.

1.1 Background

The trial resnagging of the Barham River estuary was funded through the Victorian Government 'Our Waters Our Future' action plan and was completed by the Corangamite CMA with support from adjacent landholders, Fisheries Victoria and local anglers.

Preliminary research by the Corangamite CMA was undertaken to determine the existing volume of LWD in the Barham River and the quantity of timber needed to be returned to the river to improve estuary health (Denis Lovric, pers. comm., 2006). The resnag volume was determined using the relationship 0.01m^3 of LWD for each m^2 of channel bed area as prescribed under 'The Riparian Land Management Technical Guidelines' (Treadwell *et al.* 1999). In total, 20 m^3 of LWD was inserted into a 250 m reach of the Barham River.

Figure 1 shows an overview of the Barham River estuary and the location where LWD was placed in the trial resnagging program.



Figure 1. Barham River estuary and the location of the resnagged reach.

1.2 Aquatic fauna of the Barham River estuary

Just one month prior to the resnagging program, a fish survey of the Barham River was undertaken (McGuckin, 2005). Although the study did not survey the actual reach in which the LWD was inserted, it provides the most recent survey data of the fish fauna for the Barham River estuary.

Table 1 lists the 8 fish species recorded in the Barham River estuary in 2005 (McGuckin, 2005). Four estuarine species were recorded; black bream (*Acanthopagrus butcheri*), the yellow eyed mullet (*Aldrichetta forsteri*), bay flounder (*Ammotretis rostratus*) and estuary perch (*Macquaria colonorum*). Migratory species (species that have lifestages in freshwater and estuarine environments) included the short finned eel (*Anguilla australis*), the common galaxias (*Galaxias maculatus*) and tumpang (*Pseudaphritis urvilli*). The only other recorded species was the flat headed gudgeon (*Philypnodon grandiceps*), which can breed in both freshwater and brackish waters.

Table 1. Fish fauna recorded in the Barham River estuary in May 2005 (McGuckin, 2005).

Scientific name	Common name
<i>Acanthopagrus butcheri</i>	black bream ^e
<i>Aldrichetta forsteri</i>	yellow eye mullet ^e
<i>Ammotretis rostratus</i>	bay flounder ^e
<i>Anguilla australis</i>	short finned eel ^m
<i>Galaxias maculatus</i>	common galaxias ^m
<i>Macquaria colonorum</i>	estuary perch ^e
<i>Philypnodon grandiceps</i>	flat headed gudgeon
<i>Pseudaphritis urvilli</i>	tumpang ^m

^m migratory species

^e estuarine species

As the Barham River estuary was closed at the time of the 2005 fish study, a number of other fish species were not recorded. Table 2 list 13 additional species that have also been recorded in the Barham River estuary (Victorian Aquatic Fauna Database, Department of Sustainability and Environment (DSE), 2006). Eight of these species are estuarine species and 4 are migratory species.

Table 2. Additional fish species recorded for the Barham River estuary (Victorian Aquatic Fauna Database, DSE, 2006).

Scientific name	Common name
<i>Arripis georgianus</i>	tommy ruff ^e
<i>Arripis trutta</i>	Australian salmon ^e
<i>Favonigobius tamarensis</i>	Tamar River goby ^e
<i>Galaxias brevipinnis</i>	climbing galaxias ^m
<i>Galaxias truttaceus</i>	spotted galaxias ^m
<i>Gymnapistes marmoratus</i>	cobbler ^e
<i>Mordacia mordax</i>	short headed lamprey ^m
<i>Mugil cephalus</i>	sea mullet ^e
<i>Prototroctes maraena</i>	Australian grayling ^m
<i>Pseudocaranx dentax</i>	snapper ^e
<i>Synaptura nigra</i>	sole ^e
<i>Tasmanogobius lasti</i>	Last goby ^e

^m migratory species

^e estuarine species

There is only one known threatened fish species for the Barham River estuary, the Australian grayling (*Prototroctes maraena*). The species is listed as a vulnerable threatened species under the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act, 1999. Australian grayling is considered a vulnerable threatened species in Victoria (DSE, 2003) and is listed for protection under the Victorian Flora and Fauna Guarantee (FFG) Act, 1988. The species has not actually been recorded in the estuary but has been captured in the freshwater reaches of the river near the picnic ground and the gauging weir at Paradise in the Barham River East Branch (Victorian Aquatic Fauna Database, DSE, 2006).

Apart from fish species, there is little known of other aquatic fauna that may occur in the Barham River estuary. There is a record of platypus (*Ornithorhynchus anatinus*) about 3 km upstream of Apollo Bay (Atlas of Victorian Wildlife (DSE), 2006) in the Barham River, but no records of tortoises or crayfish. Platypus and water rats (*Hydromys chryogaster*) were historically found in the estuary (John Coles, pers. comm., 2006). Shrimp (*Paratya australiensis*) have been recorded in the freshwater reaches of the Barham River.

2.0 FIELD STUDY

The Barham River estuary was surveyed on 15-16 May 2006, when the Barham River estuary was open to the ocean. This study was deliberately scheduled for May 2006, to be exactly one year after the last fish survey of the Barham River estuary (McGuckin, 2005) and also to allow nearly 12 months for the recolonisation of the snags placed into the river.

The water level in the estuary was approximately 1 m lower than the water level of the May 2005 fish survey, when the Barham River estuary was closed to the ocean.

Apart from undertaking a fish survey, water quality profiles were measured in the Barham River estuary.

2.1 Aquatic survey sites

A total of 6 fish survey sites were sampled in this study, all within the tidal reach of the Barham River (Figure 2). Site 1 was located upstream of the LWD resnag area. Sites 2 and 3 were in the resnagged reach. Sites 4-6 were downstream of the resnagged area, at locations which were surveyed in May 2005. Table 3 lists the location and grid reference of each of the survey sites.

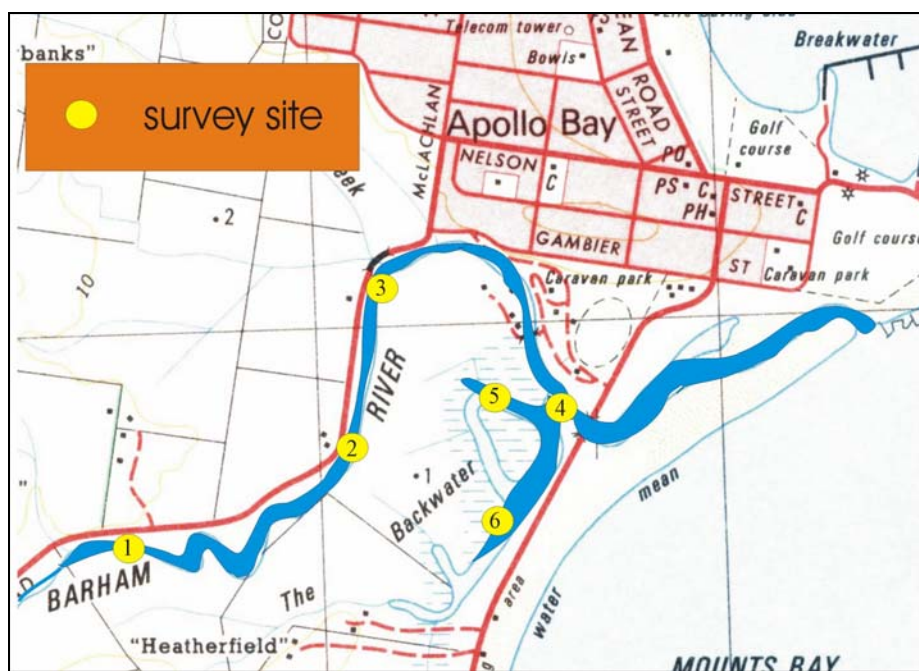


Figure 2. Aquatic survey sites in the Barham River estuary.

Aquatic sampling was conducted with fyke and gill nets. Fyke nets were used in the freshwater reach, upstream of the resnagged reach (site 1). Gill nets were used in the resnag area (sites 2 and 3). A combination of fyke and gill nets were used downstream of the resnagged reach (sites 4, 5 and 6).

At all survey sites, fish captured were identified and counted. The smallest and largest of each species was measured and weighed. Appendix 1 has a full listing of aquatic fauna captured at each survey site.

Table 3. Aquatic fauna survey sites.

Site	Location	Topographical Map Otway 7620 1:100 000	
		East	North
1	Barham River main channel near inlet from Anderson Creek, adjacent to Apollo Bay Road, upstream of LWD.	730848	5705526
2	Barham River main channel near inlet from Anderson Creek, adjacent to Apollo Bay Road near inserted LWD.	731095	5705933
3	Barham River main channel near inlet from Anderson Creek, adjacent to Apollo Bay Road near inserted LWD.	731171	5706137
4	Barham River main channel opposite the caravan park, above the Great Ocean Road, downstream of LWD.	731700	5705800
5	Shallow backwater, to the south of Apollo Bay Road, downstream of LWD.	731325	5705875
6	Shallow backwater of estuary, parallel to Great Ocean Road, towards Marengo, downstream of LWD.	731562	5705585

2.2 Depth profiles of conductivity and temperature

Conductivity and temperature depth profiles at various locations in the estuary were used to assess possible saline groundwater intrusion in the Barham River estuary. The profiles were also expected to determine whether a salt wedge was also present in the estuary.

Eight sites were chosen for depth profiles of conductivity and temperature. Four of the depth profiles points (sites A, B, C and G) were at aquatic survey sites 1-4. Three additional points (sites D-F) were pools between aquatic survey site 3 and 4. One depth profile was measured in the shallow area downstream of the Great Ocean Road bridge (site H).

Figure 3 shows the location of the water quality points. The site description and grid reference for each is given in Table 4.

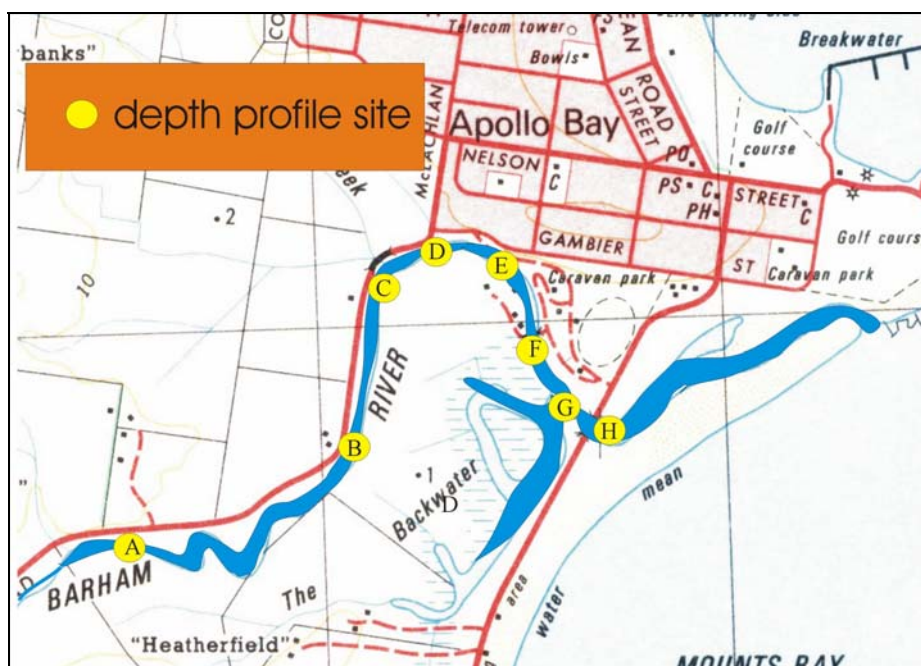


Figure 3. Water quality points in the Barham River estuary.

In situ water quality field measurements were made with an Orion Model 130 conductivity meter. The instrument was calibrated and used in accordance with NATA protocols.

The conductivity and temperature profiles were measured on 16 May 2006.

Table 4. Water profile points.

Water profile point	Fish survey site	Location	Topographical Map Otway 7620 1:100 000	
			East	North
A	1	Barham River main channel near inlet from Anderson Creek, adjacent to Apollo Bay Road near inserted LWD.	730848	5705526
B	2	Barham River main channel near inlet from Anderson Creek, adjacent to Apollo Bay Road near inserted LWD.	731095	5705933
C	3	Barham River main channel near inlet from Anderson Creek, adjacent to Apollo Bay Road near inserted LWD.	731171	5706137
D	Between 3 & 4	Adjacent to Gambier Street.	731343	5706137
E	Between 3 & 4	North western corner of caravan park.	731460	5706125
F	Between 3 & 4	Immediately downstream of private bridge opposite the caravan park.	731532	5705934
G	4	Barham River main channel opposite the caravan park, above the Great Ocean Road.	731700	5705800
H	Downstream site 4	50 m downstream of Great Ocean Road bridge.	731770	5705700

2.3 Netting limitation

The use of gill nets was considered essential to the capture of fish (particularly estuary perch), but posed a potential hazardous risk if platypus were found at any of the survey locations.

Gill nets were checked to ensure that if platypus were captured, they could be released unharmed. Gill nets set at approximately 4.30 pm were checked at dusk and at intervals after dark. Two platypus were released unharmed after being cut out of the gill nets at about 10.00 pm. A decision was made to remove all gill nets at this time, to avoid the risk of platypus capture if nets were left unattended overnight. Fortunately, the nets had already been set for sufficient time to provide indication of the presence/absence of estuary perch at each survey site.

As the fyke nets were not considered hazardous to platypus, these nets were left set overnight.

3.0 RESULTS

3.1 Aquatic fauna

A total of 598 fish were captured in this study. All 9 of the fish species were native species. Table 5 shows the aquatic fauna captured in this study. A full listing of aquatic species for each survey site is listed in Appendix 1.

Five estuarine species were captured; estuary perch, black bream, yellow eyed mullet, tommy ruff (*Arripis georgianus*) and Tamar River goby (*Favonigobius tamarensis*).

Three migratory fish species were captured, the short finned eel, the common galaxias and tupong. The flat headed gudgeon was the only other fish captured.

Gill nets in the resnagged area (sites 2 and 3) did not catch as many fish as nets set further downstream (site 4). The fyke nets captured a diversity of fish both upstream and downstream of the resnagged area. For sites downstream of the resnagged area (sites 4, 5 and 6), all species captured in 2005 were again recorded in 2006.

Platypus were the only aquatic mammal found in the Barham River estuary. One platypus was captured near the snags (site 2) with 2 being captured downstream of the snags (sites 4 and 6). Although shrimp were only captured with fyke nets (sites 1, 5 and 7), the species is expected to be widespread throughout the Barham River estuary.

Table 5. Aquatic fauna captured in the Barham River (15-16 May 2006).

	Upstream of resnagged reach	Resnagged reach		Downstream of resnagged reach			
Common name	Site 1 (2 fyke nets)	Site 2 (2 gill nets)	Site 3 (2 gill nets)	Site 4 (2 gill nets)	Site 5 (2 fyke nets)	Site 6 (4 fyke nets)	Total
fish species							
black bream ^e	1	3		23	2		29
yellow eye mullet ^e			1	2		3	6
short finned eel ^m	1				15	35	51
tommy ruff ^e		1					1
Tamar River goby ^e					16	213	229
common galaxias ^m	115				12	53	180
estuary perch ^e				12			12
flat headed gudgeon	44				1	43	88
tupong ^m					1	1	2
aquatic mammals							
platypus		1		1		1	3
crustacean							
freshwater shrimp	15				25	400	440

^m migratory species

^e estuarine species

3.2 Water quality

Tables 6 and 7 show the conductivity and temperature profiles for the 8 survey points in the Barham River estuary. The measurement were made on an outgoing tide.

Table 6 shows that at all survey points, the upper 1 metre of the water column had a conductivity of less than 1700 EC. Conductivities of over 40000 EC were noted at all locations with a water depth exceeding 1.5 m. The salinity depth profiles provide no sign of a salt wedge in the estuary. The highest conductivity of 48300 EC was recorded close to the Great Ocean Road bridge (site G), at the only site where estuary perch were captured.

Table 7 shows that the surface freshwater was around 12°C, with the saline underlying layer between 14.5-15.1°C. The underlying water temperature would be expected to be fairly consistent throughout the year and would not be substantially influenced by the opening or closing of the estuary.

Table 6. Conductivity profile at each survey point (values are in EC units).

Fish survey site	1	2	3	Between 3 & 4			4	Downstream of site 4
Depth from surface	Profile A	Profile B	Profile C	Profile D	Profile E	Profile F	Profile G	Profile H
0.0	528	526	717	717	1028	1081	1199	1454
0.5	546	582	704	786	1014	1154	1384	1692
1.0	744	1050	723	26400	37500	43300	30800	
1.5	41300	41100	41900	42100	43800	43800	43500	
1.7	41400		41900					
2.0			41900	43700	44700	46200	47400	
2.5				43800	44900	46800	48200	
2.8							48300	
3.0				43900	45100	46800		
3.5						47000		
4.0								

Table 7. Water temperature profile at each survey point (values are in °C).

Fish survey site	1	2	3	Between 3 & 4			4	Downstream of site 4
Depth from surface	Profile A	Profile B	Profile C	Profile D	Profile E	Profile F	Profile G	Profile H
0.0	12.0	12.1	12.2	12.4	12.2	12.4	12.7	13.0
0.5	12.0	12.0	12.2	12.3	12.3	12.4	12.6	12.8
1.0	12.0	12.2	12.6	12.7	13.3	13.5	14.0	
1.5	14.5	14.5	14.9	14.6	14.8	14.9	14.9	
1.7	14.5		14.8					
2.0			14.8	14.8	14.9	15.1	15.1	
2.5				14.8	14.9	15.1	15.1	
2.8							15.1	
3.0				14.8	14.8	15.1		
3.5						15.1		
4.0								

4.0 DISCUSSION

4.1 Estuarine fish species

Five estuarine fish species were captured in the Barham River estuary. The recreationally important species included estuary perch, black bream and yellow eyed mullet. Two additional species, tommy ruff and the Tamar River goby were also captured. Several of the species historically recorded for the estuary (see Table 2) were not recorded in this study.

Estuary perch were only captured immediately upstream of the Great Ocean Road (site 4), at the precise location in which the species was captured last year (McGuckin, 2005). The 12 estuary perch captured were adults between 280 and 370 mm in length. Fish were only captured near the bottom where salinities were in the vicinity of 40000 EC. No fish were captured in the upper surface waters or in the shallower waters near the resnagged reach. When spring tides occur, a salt wedge may allow for the upstream passage of estuary perch into deep pools above the resnagged reach.

No young estuary perch were recorded in the Barham River in this study or in the 2005 study.

Estuary perch are believed to breed in the salt wedge at the mouth of estuaries in July and August (McDowall, 1996), yet for the Barham River there is no defined salt wedge. Perhaps estuary perch do not breed in the Barham River estuary and their presence is dependent upon ocean recruitment.

Larger estuaries like the Barwon or Hopkins River where salt wedges allow for successful spawning of estuary perch may be the source of estuary perch that move into the Barham River. Spring tides may be the trigger needed for recruitment from the ocean into the deeper saline pools of the estuary.

Black bream were captured throughout the Barham River estuary including the resnagged reach (site 2). In total 29 black bream were captured. The majority of the fish were between 230 and 320 mm and sexually mature. Three juveniles of 66-77 mm in length were also captured, which shows that some recruitment of the species has occurred in the past 12 months. The flooding of estuary backwaters when the entrance is closed is expected to provide habitat and food for larval fish.

A wide range of yellow eyed mullet age classes is expected in the Barham River estuary, although the only fish captured ranged from 218 mm to 315 mm in length. The species was captured in the resnagged reach of the estuary (site 3) and in the lower reaches of the estuary (site 4 and 6).

The only tommy ruff captured in this study was found in the resnagged reach of the estuary (site 2). The Tamar River goby was only captured in the backwater of the estuary (sites 5 and 6).

Black bream could potentially become residents within the resnagged reach of the Barham River estuary, with other estuarine species occasionally visiting the area.

4.2 Migratory fish species

A number of migratory fish species have been recorded in the Barham River estuary. Migratory fish recorded in this study included the short finned eel, the common galaxias and tupong. Two other migratory species captured in freshwater reaches of the river in 2005, the spotted galaxias (*Galaxias truttaceus*) and the pouched lamprey (*Geotria australis*) could also occasionally be found passing through the estuary.

Another migratory species that could occur in the Barham River estuary is the threatened Australian grayling. The species was last recorded in the freshwater reach of Barham River at the gauging weir near Paradise in 1999 (Aquatic Fauna Database, DSE, 2006). The species has not been seen in large numbers in the Barham River estuary for many years (John Coles, pers. comm., 2006). The species is most likely to be found in the estuary between October and December, when juveniles are expected to migrate from the ocean (Koehn and O'Connor, 1990).

Other possible migratory fish species that may be found in the Barham River estuary include the short headed lamprey and the climbing galaxias, both of which have not been recorded in either the 2005 or 2006 surveys.

Migratory fish species will not become residents within the trial resnagged reach of the Barham River estuary. These species will, however, use this area in passing between the estuary and the freshwater reaches of the Barham River.

4.3 Estuary salinity

It has been suggested that a highly stratified salt wedge occurs in the Barham River estuary when the estuary is open to the ocean (Sherwood *et al.*, 2003). Findings in this study do not support this theory, instead it is suggested that saline intrusion is occurring in the Barham River estuary.

There is a freshwater lens over an underlying layer of salt water and there is no indication that this is a salt wedge. This salt water appears to be entering through the bed and banks the estuary (Photograph 1). Salinity profiles suggest characteristics in the Barham River estuary are similar to inland waters where saline groundwater intrusion occur (McGuckin, 1991).

Saline intrusions are likely to be important in the long term maintenance of salinity levels within the estuary. Salt wedge are only expected when spring tides allow saltwater from the ocean to penetrate into the deeper pools of the estuary. These spring tides may be crucial to the flushing of saline pools and to the passage of migratory fish passage into and out of the estuary.



Photograph 1. Saline water (orange stained areas) intruding into the Barham River estuary.

4.4 The resnagged reach of the Barham River estuary

Invertebrates are expected to have colonised the inserted LWD snags and fish are now re-establishing in the area. Black bream, yellow eyed mullet and tommy ruff were all found near the snags. Photograph 2 shows LWD in the resnagged reach near where a platypus was captured.

It is suspected that the absence of estuary perch near the LWD is expected to be partially attributed to the shallowness of the resnagged reach in comparison to other reaches of the estuary. The only location where estuary perch were captured in this study and in the 2005 study had a conductivity above 40000 EC (site 4). Within the resnagged area, only conductivities within 1-1.5 m of the bottom could be expected to be utilised by estuary perch. As salinity concentrations appear to be important to estuary perch, positioning of snags within the deeper reaches of the estuary would maximise opportunity for providing habitat for estuary perch.



Photograph 2. One of the snags near where a platypus was captured.

Future LWD placed into the Barham River estuary should have both the root wad and branching foliage attached. Root wads are ideal for long term anchorage, and assist with scouring holes that provide habitat for fish. Branching foliage helps with the initial colonisation of the LWD by micro organisms and invertebrates.

Planting of fringing native vegetation would further enhance the value of the resnagged reach, providing bank stability, shading of the estuary channel and a potential food resource for aquatic fauna. Nankeen night herons, seen further downstream, may eventually move into the area if riparian zones are revegetated.

5.0 CONCLUSION

The trial resnagged reach provides a first stage in the enhancement of aquatic habitat in the Barham River estuary. Less than a year since the insertion of the snags and the area is providing fish habitat for black bream, yellow eyed mullet and tommy ruff.

Estuary perch were not found in the resnagged area, possibly because this species favours the more saline waters within the deeper pools of the estuary. Future resnagging of the deeper pools would be expected to be beneficial to the resident estuary perch population.

Migratory fish can be expected to benefit from the resnagging of the estuary, using these areas for cover in their movement between freshwater and saltwater environments.

Platypus would appear to favour the newly snagged reach, possibly because of the abundance of invertebrates that have colonised upon the submerged timber.

Although the insertion of LWD has provided additional habitat to the Barham River estuary, LWD is only one component in the restoration of estuary health. Replanting with native riparian vegetation and the removal of cattle from the estuary floodplain could improve the physical condition of the Barham River estuary surrounds. Water quality could also be improved if faecal material is no longer being washed into the estuary and banks are not being eroded by cattle.

6.0 RECOMMENDATIONS

- Future resnagging of the Barham River estuary should occur. The LWD will provide habitat for estuary perch if it is placed into the deeper, more saline pools of the estuary.
- Corangamite CMA should consider the planting of native riparian vegetation along the upper reaches of the estuary and the removal of cattle from the estuary floodplain.

7.0 ACKNOWLEDGEMENTS

I would like to thank Denis Lovric from the Corangamite CMA for commissioning Streamline Research for this study. Paul Close from the University of Western Australia is thanked for this thoughts on salinity conditions found in the estuary. John Coles provided invaluable historical recollections of the aquatic fauna of the Barham River. Finally, I am indebted to the field assistance provided by Ron Lewis and Tom Ryan, who were prepared to spend long hours on the estuary on a very cold night.

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APPENDIX 1. Aquatic fauna captured in the Barham River

Site	Technique	Fish species (scientific name)	Fish species (common name)	No. of fish	Length (mm)	Weight (g)	Additional information
1	2 fyke nets (3 mm) (14 hours)	<i>Acanthopagrus butcheri</i>	black bream	1	77	7	15 shrimp
		<i>Anguilla australis</i>	short finned eel	1	500		
		<i>Galaxias maculatus</i>	common galaxias	115	53-108	2-8	
		<i>Philypnodon grandiceps</i>	flat headed gudgeon	44	32-77	<1-4	
2	2 gill nets (4 hours)	<i>Acanthopagrus butcheri</i>	black bream	3	280-320	420-660	1 male platypus
		<i>Arripis georgianus</i>	tommy ruff	1	180	100	
3	2 gill nets (4 hours)	<i>Aldrichetta forsteri</i>	yellow eye mullet	1	300	320	
4	2 gill nets (4 hours)	<i>Acanthopagrus butcheri</i>	black bream	23	230-315	210-650	1 male platypus
		<i>Aldrichetta forsteri</i>	yellow eye mullet	2	240-250	140-160	
		<i>Macquaria colonorum</i>	estuary perch	12	280-370	420-1000	
5	2 fyke nets (3 mm) (14 hours)	<i>Acanthopagrus butcheri</i>	black bream	2	66-72	5-6	25 shrimp
		<i>Anguilla australis</i>	short finned eel	15	300-650		
		<i>Favonigobius tamarensis</i>	Tamar River goby	16	28-44	<1	
		<i>Galaxias maculatus</i>	common galaxias	12	72-180	1-6	
		<i>Philypnodon grandiceps</i>	flat headed gudgeon	1	47	<1	
		<i>Pseudaphritis urvillii</i>	tupong	1	260	159	
6	4 fyke nets (3 mm) (14 hours)	<i>Aldrichetta forsteri</i>	yellow eye mullet	3	218-315	114-372	1 male platypus 400 shrimp
		<i>Anguilla australis</i>	short finned eel	35	150-600		
		<i>Favonigobius tamarensis</i>	Tamar River goby	213	20-34	<1	
		<i>Galaxias maculatus</i>	common galaxias	53	52-105	<1-7	
		<i>Philypnodon grandiceps</i>	flat headed gudgeon	43	27-85	<1-5	
		<i>Pseudaphritis urvillii</i>	tupong	1	200	72	