Fish in Orphan School Creek

Despite being somewhat polluted at present, our creeks are home to a variety of native fish. As a local creek enthusiast, I have found 17 different species of native fish at Orphan School Creek. Unfortunately the fish have been showing signs of stress associated with poor water quality and lack of suitable habitat.









The perfect environment for sustaining aquatic life and the food web

The four basic needs of fish – water for survival, shelter, food resources and breeding areas – are all found in unaltered streams. Quiet backwaters, slow deep pools, undercut banks, weed beds, boulders, shaded areas, gravel beds and large submerged logs provide a rich and diverse environment that is fully utilised by many species of native freshwater fish.

Orphan School Creek once had a very high, biodiverse environment. Because its creek bed was made up primarily of gravel, 2 to 3 centimetre particles, it provided the perfect environment for a wide range of small creatures to live. Studies have shown that in gravel-bed streams, up to 500% more aquatic invertebrates, or 'food for fish', can be found. Unfortunately, this is not the case for Orphan School Creek, where naturally formed gravel beds have been silted and contaminated by heavy metals and batteries, resulting in the destruction of huge quantities of aquatic life.



Clam found in Inter-tidal and Riffle zones.





















The many forms of life in and around Orphan School Creek

There are many good reasons for restoring Orphan School Creek to its former condition. An improved creek environment will mean more fish, which will result in more birds adopting the creek as a viable feeding ground.

Native fish found in Orphan School Creek include the **Australian Bass**, **Australian Smelt**, Silver Biddy, Southern Blue Eye, Yellowfin Bream, **Bullrout**, **Jollytail Galaxias**, **Dwarf Flat Head Gudgeon**, **Flat Head Gudgeon**, **Striped Gudgeon**, Cox's Gudgeon, Sea Mullet, Freshwater Mullet, **Empire Fish**, Estuary Perchlet, **Long-finned Eel**, and the Short finned Eel, (See back pages for more details about these

and the Short-finned Eel. (See back pages for more details about these fish)



Black Mussel (Mytis edulf).

A survey of a 50 metre section of Orphan School Creek, between the suburbs boundary of Fairfield and Canley Vale, revealed a diversity of habitat for various species of fish. Eight different types of habitat were observed:



Fish survey site:

This area is a fish nursery where Empire Fish, Dwarf Flathead Gudgeon, Flathead Gudgeon, Striped Gudgeon and Australian Smelt breeds are found. A Fish Survey, done between October 2000 and March 2002, is detailed on the following pages.

- Deep pool with rocks, logs, weeds and gravel bed
- Small pool with logs and a mud bottom
- Raised weed bed with littered logs and rocks, gravel and a cut channel
- Riffle zone with rocks, a few logs and gravel underneath
- Rock shelves with shallow, flat areas and drop off points
- Small pool with undercut banks, rocks, logs, with a rock shelf and gravel bottom.
- Open areas with a gravel bed lined with logs, rocks and weeds
- Inter-tidal zone with rocks, swamp plants, and a sandy mud bottom — a very rare habitat still intact in Orphan School Creek, this site being an excellent model as a diverse habitat and for some creatures it is a vital area to for survival. This site is exposed to the air at low tide, and submerged at high tide, with an approximate drop of 1 metre between tides.



Inter-tidal zone.



Riffle zone and rock shelf



Open area

Bullrout (Notesthes robusta)

Size: Grows to 30cm but commonly reaches 20 cm in length. Juvenile Bullrouts were seen in

Orphan School Creek in 2002 around 2cm in length

Habitat: Uses a wide variety of habitats from the sea to slow flowing freshwater streams like

Orphan School Creek. Has very good camouflage and can go unnoticed when in

amongst gravel, weeds, rocks, logs and on top of organic matter.

Usually waits at a drop off point waiting in ambush for some unsuspecting prey and unleashes a sudden strike. A very docile fish, but very hazardous as it has venom glands on its spikes. It has venomous spikes on its dorsal fin, head and anal fin and pelvic fins. When puncturing your skin will cause severe pain and medical attention will be needed.

Consult St John Ambulance literature.



Bullrout. Blind in eye from infection.

Diet: This fish will only eat moving targets. The Bullrout doesn't scavenge on dead creatures like some of our other native fish. They will eat shrimp, prawns, and aquatic insects, small and medium fish.

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Breeding: Nothing known about its breeding habits, although juvenile Bullrouts 2 to 3 cm long have been seen in freshwater streams that have had dams and weirs blocking fish passage to sea.

Not too common in waterways, although the lower sections of Orphan School Creek have had few Bullrouts fairly evenly distributed in the warmer months, when small native fish are in abundance.

Gambusia

The most abundant fish species in Orphan School Creek, is a non-native fish that is a pest.



Gambusia, not a native fish. A pest species of fish in Orphan School Creek.

Australian Bass (Macquaria novemaculeata)

Size: Australian Bass grow up to 60 cm (3.8 kg), but a fish of 35 cm (1 kg) are more common.

Juvenile Australian Bass 4cm to 6 cm long were seen in Orphan School Creek in late

January and in April 2002.

Habitat: Australian Bass use a variety of habitats as they have to travel great distances to breed.

The lower sections of Orphan School Creek provide a rich and diverse habitat as it has lots of deep pools, large submerged logs, rock shelves, weed beds, undercut banks and,

food resources.

Diet:



like grasshoppers, dragon flies, moths, lizards and frogs. Australian Bass are good at keeping the Gambusia, a pest species of fish,

population down.

Breeding: Australian Bass migrate from small flowing freshwater streams to estuaries in winter to breed. They need salty waters in which they breed in temperatures from 14 to 19°C.

The amount of habitat available for Australian Bass as well as many other native fish has been affected by development and land clearing. Less than ten percent of Orphan School Creek is suitable for Australian Bass as there is a weir at Canley Vale Railway Bridge blocking fish passage to Green Valley Creek, Clear Paddock and the upper reaches of Orphan School Creek.

Australian Bass numbers are down as creeks have been turned into concrete channels with weirs, barriers and dams constructed. These modifications to the waterways have blocked Australian Bass from completing its breeding cycle.



Where concrete meets the creek, with Orphan School Creek on the left and Clear Paddock Creek on the right.



Juvenile Australian Bass.



Weir at Canley Vale.

Striped Gudgeon (Gobiomorphus australis)

Size: Grows to 17.5 cm but commonly grows to 12 cm

Habitat: Prefer turbid waters like Prospect Creek rather than clear waters like Orphan School

Creek once was. One section known in Orphan School Creek where Striped Gudgeons

can be found is a section of mud bottom with large logs.

The Striped Gudgeon is a food source for larger fish and water birds.

Diet: Worms, aquatic insects and small fish. The Striped Gudgeon is a good predator for

keeping the population of non-native fish in control, such as the Gambusia.

Breeding: Spawns in later summer and autumn, in temperatures 19°C to 21°C.



Striped Gudgeon.

Australian Smelt (Retropinna semoni)

Size: Grows to 10 cm but commonly grows to 7.5 cm.

Habitat: A mid surface fish mainly in schools. Australian Smelt require gravel beds in which the eggs fall in amongst. Doesn't usually use much habitat as it lives in

the open water. Sometimes the Australian Smelt is seen in small schools in

Orphan School Creek.

Diet: A pure carnivore eating small aquatic and terrestrial insects. Also eats very

small fish. The Australian Smelt is a food source for larger fish and birds.

The Australian Smelt is a good control for mosquitos as it eats both the mosquito larvae in the water and mosquitos that land on the

surface of the water.

Breeding: Spawns in spring, eggs fall to the bottom where they develop. The eggs take 10 days to hatch. A school of juvenile fish can be seen

in Orphan School Creek in summer. They take one year to mature into adults.



Australian Smelt.

Empire Fish (Hypseleotris compressa)

Size: Empire Fish grow to 10 cm but a fish 5 cm to 7 cm are more common. Matures at 4 cm

to 5 cm.

Habitat: Found throughout the whole lower section of Orphan School Creek. The Empire Fish like

a range of habitats, from deep pools with large submerged logs and weeds to shallow weeded areas with rocks and logs. They have even been seen on shallow rock shelves.

Diet: Empire Fish are omnivores eating plants and animals. They are an effective hunter for the

control of mosquito larvae. The Empire Fish will eat small aquatic invertebrates, algae,

detritus and soft native and non native weeds. The Empire Fish is a food source for larger fish and water birds.

Breeding: The Empire Fish breed in the warmer months, when there is an abundance of small aquatic

creatures for them to eat. The Empire Fish breed in shallow sheltered areas where there is lots of logs, rocks and weeds for them to deposit their eggs on. The male Empire Fish in breeding colour, will turn bright orange to red near the gill area, his fins turn shiny black, red and a light blue pearl colour. When the male Empire Fish is in breeding colours, he is very aggressive and will attack fish at

least twice his size.

The Empire Fish has been seen in large numbers in Orphan School Creek, particularly in the warmer months. Young Empire Fish will school together as well as being solitary. One of the most common native fish found in the lower section of Orphan School Creek.

Flathead Gudgeon (Philypnodon graniceps)

Size: Grows to 11.5 cm, but commonly grows to 8 cm in length.

Habitat: Slow flowing waters with mud, gravel, weed beds and rock shelves. Found in a range

of habitats in Orphan School Creek. They are found on shallow rock shelves, small pools, deep pools, with weeds, rocks, gravel and logs. It's a bottom dwelling fish spending most

of its time on the bottom of the creek.

The Flathead Gudgeon is a common fish in lower Orphan School Creek.

Diet: The Flathead Gudgeon eats moving targets, a pure carnivore eating small shrimps, fish

and aquatic insects. They will even eat their own kind. The Flathead Gudgeon is a good control of Gambusia (non- native fish) populations. The Flathead Gudgeon is a

food source for larger fish and birds.



Empire Fish.

Flathead Gudgeon.

Breeding: Breed in spring and summer over a long period through to winter. Little research done on the natural history.

Dwarf Flathead Gudgeon (Philypnodon - undescribed)

One of the most common fish found in lower Orphan School Creek.

Size: Grows to 5 cm, but more commonly seen 4 cm in length.

Habitat: Lives in slow flowing waters, likes shallow and deep weeded areas littered with logs,

rocks, open gravel areas and rock shelves. Found in all lower sections of Orphan School

Creek in a range of habitats.

Diet: Eats very small fish, mosquitos, worms and aquatic insects. Will eat food either dead or

alive. Dwarf Flathead Gudgeons are a food source for larger fish and birds.

Breeding: No research has been done on life history. In Orphan School Creek 0.5 cm Dwarf

Flathead Gudgeons were seen. They occurred the same time as Empire Fish 0.5 cm to

1 cm in length. Gudgeons, full of yellow eggs, were seen in October 2000.



Dwarf Flathead Gudgeon.

Longfinned Eel (Anguilla reinhardtii)

Size: Grows to 1.5 metres (14 kg) in length, commonly 1 metre in length. Females found larger

than males.

Habitat: Found throughout all natural sections of Orphan School Creek to Avoca Road. May

even be found further upstream as it can travel on land when it is wet, providing that there is some food source. Eels are one fish that has been able to combat weirs, dams and other obstacles. Eels hide under gravel, detritis (broken down organic matter – leaves etc) mud, and weeds. Eels live under tyres, logs, large rocks, and in deep pools

and shallow area. Eels prefer still to slow flowing fresh water.

Diet: Large eels will eat small water birds like ducklings. They will eat anything dead in the

creek:. birds, fish large and small. Small eels will eat aquatic insects and small fish.

Breeding: Adult eels migrate to the sea from slow flowing freshwaters in autumn where they travel thousands of kilometres to another sea to breed in the depths of the Coral Sea

near New Caledonia.

Young eels called 'elvers', return back to freshwaters in spring and summer, and mature

in fresh waters taking 10 to 20 years to mature.



Eel in Orpahn School Creek.

Jollytail Galaxias (Galaxias maculatus)

Size: Grows to 19 cm but more often seen around 10 cm in length. Juvenile Galaxias were

seen in November 2001 in Orphan School Creek around 5 cm in length as

semi-transparent (just getting its colouration).

Habitat: Well vegetated banks, deep pools, weed beds, large and small submerged logs, undercut

banks, shaded areas, overhanging branches (vegetation). These streamlined fish are very efficient hunters, as they are very fast to strike and have very good eye sight. It can see

metres away and quick to disperse when it feels threatened.

Diet: Will eat a wide variety of small aquatic and terrestrial insects. The Jollytail Galaxias is a

food source for larger fish and birds.

Breeding: Jollytail Galaxias need a certain night in which they breed. They migrate from slow flowing fresh waters downstream on a full moon

or new moon in autumn. They spawn amongst vegetation in river estuaries. They have around 7,000 eggs, larvae spend winter at sea and migrate back into freshwater, around 5 cm long. They then move upstream to grow into adults. In Orphan School Creek Jollytail Galaxias has the same problem as Australian Bass, having its habitat limited by a weir blocking fish passage to complete its life cycle

also reducing its habitat.



Common Jollytail (Galaxias maculatus).

Fish Survey Orphan School Creek

50 metre section between the border of Fairfield and Canley Vale.

DATE	COMMON NAME	NO. OF FISH	COMMENTS
16.10.00 day	Dwarf Flat Head Gudgeon Long Finned Eel	2	every fish had body fungus (diseased)
1.11.00 to 4.11.00	Jolly Tail Galaxias Empire Fish Bull Rout Mullet Long Finned Eel	5 40 1 4 6	all juvenile in breeding colours blind in right eye
8.11.00 night low tide	Prawn European Carp	1 8	poor visibility breeding in shallows
9.11.00 day low tide	Dwarf Flat Head Gudgeon	1	bacterial problem
11.11.00 day low tide	Dwarf Flat Head Gudgeon	10	full of eggs carp eggs all infertile from silt covering eggs
30.12.00 night low tide	Striped Gudgeon Empire Fish Mixed Native	10 20 40	
31.12.00 night low tide	Australian Smelt Dwarf Flat Head Gudgeon Empire Fish	8 11 5	3 with whitespot 1 with body fungus
1.1.01 night low tide	Australian Smelt	6	poor visibility

DATE	COMMON NAME	NO. OF FISH	COMMENTS
13.1.01 night low tide	Southern Blue-Eye Striped Gudgeon Empire Fish Long Finned Eel Bull Rout Australian Smelt Mixed Native*	1 10 40 2 1 8 100	
25.1.01 night low tide	Bull Rout Southern Blue-Eye Flat Head Gudgeon Long Finned Eel Striped Gudgeon Empire Fish Dwarf Flat Head Gudgeon	4 1 15 3 8 20 25	3 juvenile, 1 large 1 small, 1 med, l large
25.2.01 night low tide	Flat Head Gudgeon Empire Fish Striped Gudgeon	20 3 2	1 had a bad fungal infection
26.2.01 night low tide	Flat Head Gudgeon Empire Fish Striped Gudgeon Bull Rout Dwarf Flat Head Gudgeon Silverbiddy Long Finned Eel Long Necked Turtle Australian Smelt	30 10 1 1 40 30 2 1 2	20 to 25 cm long adult and juvenile 1 large, 1 small extra large

50 metre section between the border of Fairfield and Canley Vale.

DATE	COMMON NAME	NO. OF FISH	COMMENTS
27.2.01 night run in tide	Yellowfin Bream Striped Gudgeon Silver Biddy Flat Head Gudgeon Dwarf Flat Head Gudgeon Long Finned Eel Long Necked Turtle Empire Fish	1 3 15 25 20 5 1	10 to 15 cm long 1 very badly diseased
9.3.01 afternoon poor visibility	Dwarf Flat Head Gudgeon Sea Mullet	6	2 adult, 4 juvenile 10 to 15 cm long
9.3.01 night poor visibility	Long Necked Turtle Silver Biddy Australian Smelt Dwarf Flat Head Gudgeon	1 1 2 3	
24.3.01 night run in tide	Long Necked Turtle Yellowfin Bream Australian Bass Cox's Gudgeon Silver Biddy Flat Head Gudgeon Empire Fish	2 1 1 1 1 5	large 15 to 20 cm long 5 to 8 cm long had parasites had very bad fungal growth

DATE	COMMON NAME	NO. OF FISH	COMMENTS
25.3.01 night low tide	Empire Fish Dwarf Flat Head Gudgeon Flat Head Gudgeon Long Necked Turtle Sea Mullet	5 1 10 1 10	all small (juvenile)
26.3.01 night low tide	Empire Fish Flat Head Gudgeon Australian Smelt Long Necked Turtle	1 2 1	both juvenile extra large
27.3.01 night low tide	Flat Head Gudgeon Australian Smelt Dwarf Flat Head Gudgeon Golden Carp	2 2 1	both diseased both diseased not native (diseased)
31.3.01 night low tide	Long Necked turtle Empire Fish Long Finned Eel Australian Smelt Dwarf Flat Head Gudgeon Flat Headed Gudgeon Jollytail Galaxias	1 5 1 3 6 10 1	medium extra large

50 metre section between the border of Fairfield and Canley Vale.

DATE	COMMON NAME	NO. OF FISH	COMMENTS
1.4.01 night run in tide	Yellowfin Bream Empire Fish Flat Head Gudgeon Dwarf Flat Head Gudgeon Long Finned Eel Long Necked Turtle Jolly Tail Galaxias Australian Smelt Striped Gudgeon	1 4 15 10 1 1 1 6	20 to 25 cm long diseased
25.5.01 night low tide	Australian Smelt Striped Gudgeon Empire Fish Long Finned Eel Flat Head Gudgeon Dwarf Flat Head Gudgeon	2 2 45 1 2 15	large 6 to 7 cm small sized small to medium size
7.6.01 night low tide	Empire Fish Striped Gudgeon Flat Head Gudgeon Dwarf Flat Head Gudgeon Mixed Native*	2 1 15 12	large large fingerling/juveniles
9.6.01 night low tide	Mixed Native* Flat Head Gudgeon Empire Fish Dwarf Flat Head Gudgeon Freshwater Mullet	40 4 2 3	1 had red spot juvenile (school)

DATE	COMMON NAME	NO. OF FISH	COMMENTS
5.7.01 night low tide	Australian Smelt Long Finned Eel Dwarf Flat Head Gudgeon Flat Head Gudgeon Mixed Native* Freshwater Mullet	1 1 25 10 300 5	Large 40 cm long juvenile juvenile
8.7.01 night low tide	Striped Gudgeon Australian Smelt Flat Head Gudgeon Dwarf Flat Head Gudgeon Long Finned Eel Freshwater Mullet Mixed Native*	1 4 10 65 1 5 400	large juvenile small & large 40cm long juvenile juvenile
14.7.01 night low tide	Long Finned Eel Australian Smelt Freshwater Mullet Dwarf Flat Head Gudgeon Mixed Native* Empire Fish Crab	3 2 30 35 25 3	juvenile juvenile large one of 9 species hymenosomatidae



50 metre section between the border of Fairfield and Canley Vale.

DATE	COMMON NAME	NO. OF FISH	COMMENTS
26.7.01 night low tide	Australian Smelt Long Finned Eel Flat Head Gudgeon Empire Fish Dwarf Flat Head Gudgeon Mixed Native*	7 3 2 2 2 25 50	4 fish diseased 1xxx large,1 med, l sml 1 small & l large med size, 1 diseased juvenile
2.8.01 night run in tide poor visibility	Freshwater Mullet Dwarf Flat Head Gudgeon Jollytail Galaxias Yellowfin Bream Mixed Native*	10 8 1 1 5	juvenile >13 cm 15 cm long juvenile
9.8.01 night low, low tide	Sea Mullet Striped Gudgeon Mixed Native* Freshwater Mullet Flat Head Gudgeon Dwarf Flat Head Gudgeon	4 1 20 150 3 25	approx 13 cm long juvenile juvenile (schools)
23.8.01 night low tide	Jollytail Galaxias Oriental Weather Loach Longfinned Eel Mixed Native* Dwarf Flat Head Gudgeon Freshwater Mullet	1 1 2 10 10	not native medium sized juvenile juvenile

DATE	COMMON NAME	NO. OF FISH	COMMENTS
10.9.01 night	Long Finned Eel Long Necked Turtle	4	large and medium X large
low tide	Australian Smelt Oriental Weather Loach Dwarf Flat Head	1 1 15	not native
	Gudgeon Flat Head Gudgeon Freshwater Mullet Sea Mullet Empire Fish Mixed Native*	10 50 15 2 5	juvenile large juvenile
23.9.01 night low tide	Long Necked Turtle Long Finned Eel Australian Smelt Dwarf Flat Head Gudgeon Empire Fish Striped Gudgeon Mixed Native* Freshwater Mullet Bull Rout Sea Mullet Eastern Water Dragon	2 2 4 10 5 2 5 400 1 1	juvenile juveniles, scattered & schools medium sized approx 13 cm under the water



50 metre section between the border of Fairfield and Canley Vale.

DATE	COMMON NAME	NO. OF FISH	COMMENTS
6.10.01 night low tide	Striped Gudgeon Jollytail Galaxias Flat Head Gudgeon Freshwater Mullet Dwarf Flat Head Gudgeon Long Finned Eel Oriental Weather Loach Empire Fish	3 1 10 5 20 4 1 2	fingerling/juvenile juvenile 3 medium, 1 x large not native
5.11.01 night low tide	Australian Smelt Jollytail Galaxias Dwarf Flat Head Gudgeon Flat Head Gudgeon Striped Gudgeon Long Finned Eel Long Necked Turtle Empire Fish Freshwater Mullet	3 2 20 1 2 2 3 3 20	juvenile 1 large, 1 small all x large
20.1.02 night low tide	Long Necked Turtle Long Finned Eel Dwarf Flat Head Gudgeon Flat Head Gudgeon Empire Fish Sea Mullet Australian Bass Estuary Perchlet Bull Rout Striped Gudgeon	1 3 30 40 100 10 2 1 3 1	large diseased 1 adult, 2 juvenile

DATE	COMMON NAME	NO. OF FISH	COMMENTS
22.2.02 day,noon low tide	Australian Smelt Dwarf Flat Head Gudgeon Australian Bass Gambusia	4 1 2 1000	small not native
2.3.02 night low tide	Flat Head Gudgeon Dwarf Flat Head Gudgeon Yellowfin Bream Empire Fish	10 2 1 40	large large medium

^{* &}quot;Mixed Native" means Juvenile Empire Fish, Dwarf Flat Head Gudgeon, Flat Head Gudgeon and Striped Gudgeon (when they can be found!).



A better future for fish in the creek

In 2001, The Natural Heritage Trust awarded \$22,250 to the Fairfield Creeks and Wetlands Group to carry out a pilot project for the restoration of fish habitat. Work carried out under the grant took place during 2002 in Orphan School Creek, Johnston Park, and includes the creation of pools and riffle zones, the removal of rubbish and weeds and revegetation of the creeks banks with native plants.

The project features artwork in the form of a four metre long fish seat that overlooks the restoration area and tells visitors about the different types of fish in the creek. A good way to visit the site is by bike – follow the Orphan School Creek cycleway.



Restoration site - Orphan School Creek, Johnston Park

Daniel Smart

Community representative 5 Creeks Catchment Committee & resident near Orphan School Creek.



The Fish Seat at Orphan chool Creek, Canley Vale

January 2003

Quick Quiz for Fish in Orphan School Creek by Daniel Smart

- 1. Which fish from our waterways in Orphan School Creek travels to the Coral Sea to breed?
- 2. Which native **fish** are helpful in keeping **mosquito** numbers down?
- 3. What does a fish that is "omnivore" mean?
- 4. What is one of the most **COMMON** native **fish** found in Orphan School Creek?
- 5. What fish can combat weirs, dams and other obstacles?
- 6. What is detritus?
- 7. Which fish in Orphan School Creek breeds on a full or new moon and during what season?
- 8. Which fish found in Orphan School Creek is venomous?
- 9. How much native habitat is left in Orphan School Creek for the Australian Bass?
- 10. What fish has excellent camouflage that it uses to capture its prey?