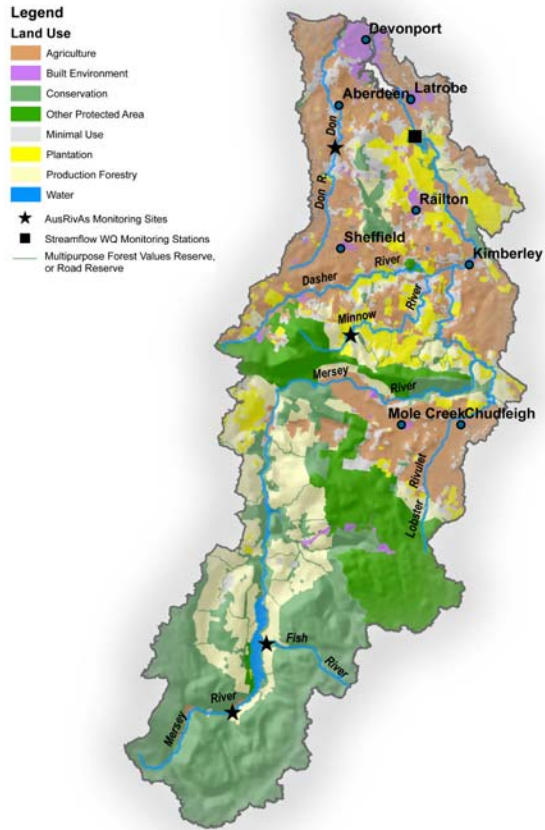


Mersey Catchment

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Tasmania

DEPARTMENT of
PRIMARY INDUSTRIES,
WATER and ENVIRONMENT

1. About the catchment

The Mersey River catchment (~1,900 km²) is defined by the drainage system of the Mersey and Don rivers. The Mersey River is the largest (147 km long) and drains more than 90 percent of the catchment, discharging into Bass Strait through Devonport. Major tributaries of the Mersey River are the Fisher River, Mole Creek and Lobster Rivulet in the upper catchment, and the Dasher and Minnow rivers lower down. Annual average rainfall increases from about 900 mm at Devonport to over 2,600 mm in the headwaters on the Great Western Tiers.

In the upper catchment, impoundments have been created for hydro-electricity generation (Lake Rowallan and Lake Parangana on the Mersey River and Lake McKenzie on the Fisher River). The combined water from these three lakes is then diverted into the nearby Forth River catchment for additional power generation.

In addition to power generation, there is also forest harvesting in the upper and middle catchment. The area downstream of Parangana Dam supports extensive agriculture – grazing, piggeries, dairying and commercial cropping. Although no major drinking water is taken from the Mersey River, a major extraction is made to supply the Wesley Vale Pulp Mill.

2. Streamflow & Water Allocation

A single streamflow monitoring station is maintained in this catchment as part of the DPIWE Statewide monitoring network, and this is located on the Mersey River at Latrobe (station 447). Streamflow data has been recorded at this station since 1962.

Total Water Allocation

The following table shows the breakdown of water allocations in the catchment.

	Total Allocation
Irrigation	15,933 ML
Stock & Domestic	1,076 ML
Water Supply	43 ML
Other	1,576 ML

An additional 45 ML per day is allocated for industrial use at Wesley Vale.

Of the total licensed water allocation within this catchment, 8,631 ML is stored within constructed storages and 9,997 ML is extracted directly from rivers and streams.

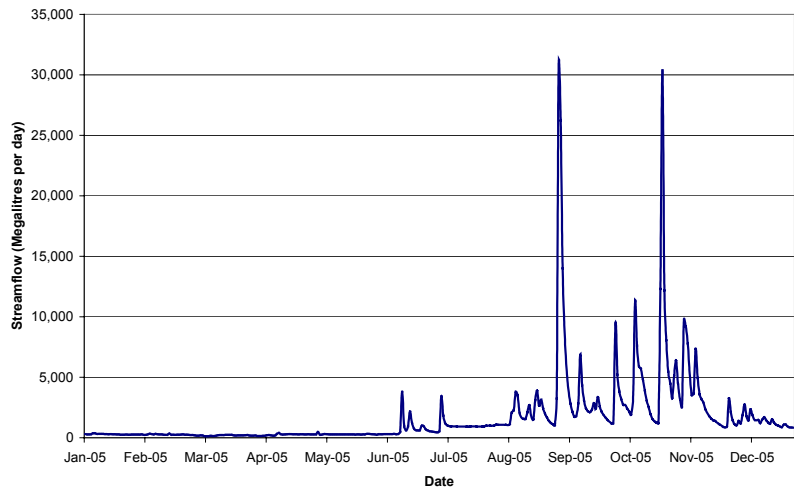


Fig: Time series of streamflow in the Mersey River at Latrobe (station 447) during 2005.

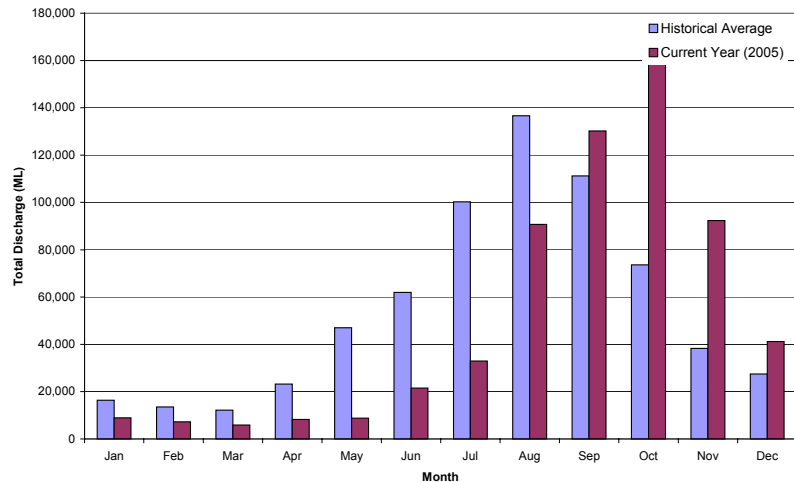


Fig: Comparison of the total monthly discharge with historical average monthly discharge for the Mersey River at Latrobe (station 447).

Water Use Restrictions

An environmental flow release of 173 ML/day is made to the middle and lower Mersey River by Hydro Tasmania. This 'minimum' flow is only reduced during very dry periods, when inflows to Lake Parangana drop below 173 ML/day.

Water use restriction levels have been developed for the Mersey River under the Mersey Water Management Plan.

3. Water Quality

Under the DPIWE Statewide baseline monitoring network, instream sensors were maintained throughout 2005 at one location in the catchment:

- Mersey River at Latrobe (station 447).

Water temperature, electrical conductivity and turbidity are continuously monitored at this station.

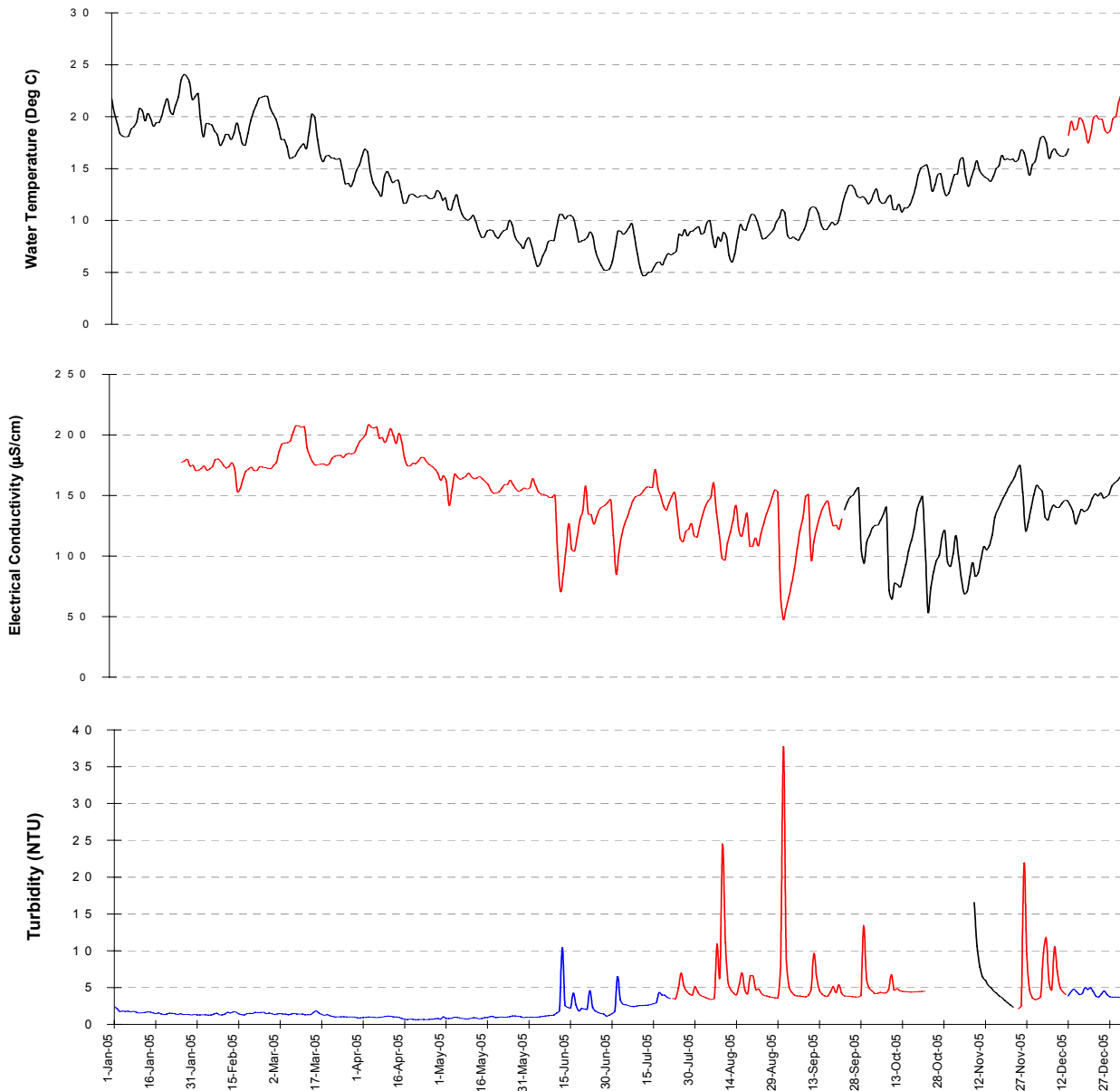


Fig: Continuous instream water quality for Mersey River at Latrobe (station 447) during 2005; Data quality coded as: Excellent; Good; Fair; or Fair Estimated Data.

Periodic water sampling is also conducted at four to six-weekly intervals at:

- Mersey River at Latrobe (station 447).

Sampling consists of spot measurements of selected water quality parameters on-site (water temperature, turbidity, conductivity, pH and dissolved oxygen). Bottled samples of water are also collected for analyses of nutrients and pesticides (collected quarterly) at the Analytical Services Tasmania laboratory.



Fig: Mersey River at Latrobe.

Links

1. Water Information System of Tasmania
<http://water.dpiwe.tas.gov.au/wist/ui>

2. Pesticide Monitoring in Tasmania
[www.dpiwe.tas.gov.au/Environmental Quality/Air Noise & Water/Water](http://www.dpiwe.tas.gov.au/EnvironmentalQuality/Air%20Noise%20&%20Water/Water)

3. Surface water quality DPIWE website
www.dpiwe.tas.gov.au/waterquality

4. ANZECC 2000 guidelines
www.deh.gov.au/water/quality/nwqms/volume1.html

Mersey River at Latrobe	Minimum	Median	Maximum	Number of samples
Temperature (deg C)	6.5	12.9	20.2	12
Turbidity (NTU)	1.05	2.55	5.4	12
Electrical Conductivity (µS/cm)	110	146	171	12
Field pH	6.86	7.44	8.25	12
Dissolved Oxygen (mg/L)	8.04	10.01	12.21	12
Dissolved Oxygen (percent saturation)	88.0	95.1	111.4	12
Total Nitrogen (mg/L)	0.177	0.55	0.84	12
Total Phosphorus (mg/L)	<0.005	0.01	0.015	12
Dissolved Reactive Phosphorus (mg/L)	<0.002	0.003	0.005	12
Nitrate-N (mg/L)	0.019	0.315	0.538	12
Nitrite-N (mg/L)	<0.002	0.002	0.004	12
Ammonia-N (mg/L)	0.005	0.009	0.018	12

All statistics derived from periodic spot samples.

4. River Health

The Australian River Assessment System (AUSRIVAS) is a standardised national system for assessment of river condition that uses benthic macroinvertebrates.

The AUSRIVAS models predict the aquatic macroinvertebrate fauna that would be expected to occur at a site in the absence of environmental stress such as pollution, habitat degradation or flow regulation. A comparison of the macroinvertebrates expected to occur at the test site with those actually collected (O/E ratio) provides a site specific measure of the biological impairment of the test site. Further details about AUSRIVAS can be found at:

www.ausrivas.canberra.edu.au/ausrivas

AUSRIVAS assessments are carried out at four locations in the Mersey River catchment;

- Don River at Sheffield Road;
- Mersey River upstream of Lake Rowallan;
- Minnow River at Belstone Road ford; and
- Fish River at Mersey Forest Road.



Fig: Don River at Sheffield Road.

Don River at Sheffield Road

This site is located immediately upstream of the Sheffield Road crossing of the Don River. The left-hand bank (looking downstream) has been cleared of riparian vegetation to the waters edge. Riparian vegetation on the right-hand bank consists of a narrow 5-10 metre strip supporting a mixture of native and exotic species.

This section of river is characterised by shallow riffles interspersed with deeper pools or slow runs flowing over predominantly pebble gravel substrate. Rubbish in the river and siltation from agricultural and road runoff has contributed to a degradation of instream habitat.

With the exception of slightly elevated conductivity and turbidity, water quality variables were within expected ranges.

Despite the degraded habitat, macroinvertebrate communities were reasonably diverse, and AUSRIVAS assessments indicate that they are similar to those predicted at a reference site. O/E values for both combined season models were 0.98 or greater.

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Au97/ Spr97	0.98	A	1.18	X
Spr03/ Au04	1.09	A	1.01	A
Spr04/ Au05		NS	1.13	A

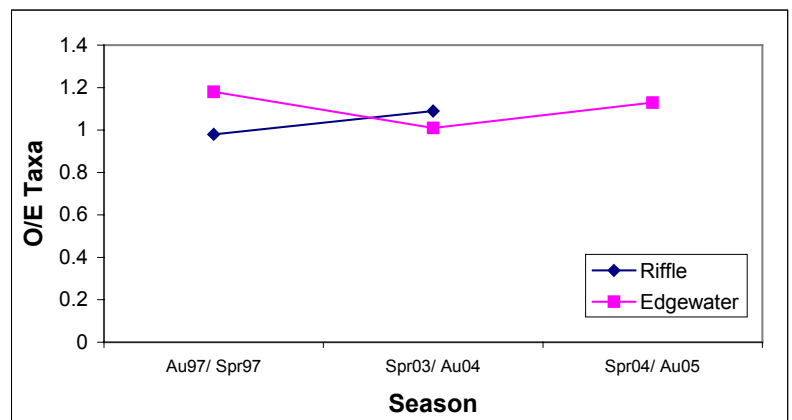


Fig: Combined season AUSRIVAS O/E Taxa scores for the Don River at Sheffield Road.

Mersey River upstream of Lake Rowallan

This site is located in the upper reaches of the Mersey River approximately 2.5 kilometres upstream of Lake Rowallan. The site lies within state forest but is bordered by the Cradle Mountain-Lake St Clair National Park to the west, the Central Plateau Conservation Area to the south and the Walls of Jerusalem National Park to the east.

Thick native forest covers the right bank (looking downstream). The left bank appears to have been partly cleared in the past although little anthropogenic impact is evident apart from a bushwalking track and a hut.

The river at this point is 23 metres wide and consists of fast riffles and runs flowing over boulder/cobble substrate. Sections of the left bank are subject to moderate to heavy erosion during periods of high flow and some bank slumping has occurred.

Turbidity, conductivity and nutrient levels were all low and indicative of excellent water quality.

This site has been continuously monitored since autumn 1998 and combined season AUSRIVAS assessment of the riffle habitat have consistently classed this site as equivalent to reference with O/E scores falling within a very narrow range (1.01 to 1.04). O/E scores for the edgewater habitat were generally higher with most values greater than 1.15 (Band X).



Fig: Mersey River upstream of Lake Rowallan.

Season	Riffle		Edgewater	
	O/E Taxa	Band	O/E Taxa	Band
Au98/ Spr98	1.04	A	1.19	X
Au99/ Spr99	1.03	A	1.02	A
Au00/ Spr00	1.04	A	1.17	X
Au01/ Spr01	1.04	A	1.18	X
Au02/ Spr02	1.01	A		NS
Au03/ Spr03	1.03	A	1.15	X
Spr03/ Au04	1.02	A	1.21	X
Spr04/ Au05	1.04	A	1.26	X

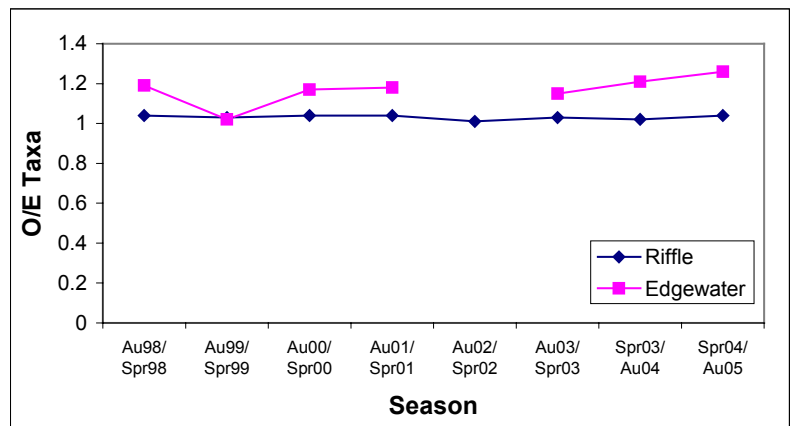


Fig: Combined season AUSRIVAS O/E Taxa scores for the Mersey River upstream of Lake Rowallan.

Minnow River at Belstone Road ford

This site is located at the ford on Belstone Road in the upper reaches of the Minnow River has been continuously sampled since spring 1994. Located within the Paradise Plantation, the site was originally surrounded by mature radiata pine (*Pinus radiata*). However harvesting and subsequent revegetation of the site between the spring 1998 and autumn 1999 sampling rounds led to the loss of stream shading and invasion of the riparian zone by blackberries



Fig: Minnow River at Belstone Road ford.

The river at this point is approximately 6 metres wide and consists of a shallow riffle/ run over below the ford and slower, deeper pool habitat above the ford.

Despite the increased risk of sedimentation from forestry activities and runoff from surrounding gravel roads, water quality is good with all parameters within expected ranges. However, there has been an increase in the amount of filamentous algae in the riffle habitat, with up to 70% cover recorded in the Autumn 2004 sampling round. This increase can be attributed to the loss of shading from overhanging vegetation.

Combined season assessments of indicate the site to be in good condition with all assessments within Band A and Band X. Results for single season assessments are similar with only the occasional assessment in Band B.

Season	Riffle		Edgewater	
	O/E Taxa	Band	O/E Taxa	Band
Spr94/ Au95	1.08	A	0.85	A
Spr95/ Au96	0.99	A	1.01	A
Au97/ Spr97	1.14	X	1.15	A
Au98/ Spr98	1.04	A	1.16	X
Au99/ Spr99	0.9	A	1.05	A
Au00/ Spr00	1.04	A	1.01	A
Au01/ Spr01	1.09	A	1.12	A
Au02/ Spr02	1.09	A	0.95	A
Au03/ Spr03	1.07	A	1.01	A
Spr03/ Au04	0.99	A	1.02	A
Spr04/ Au05	1.07	A	0.88	A

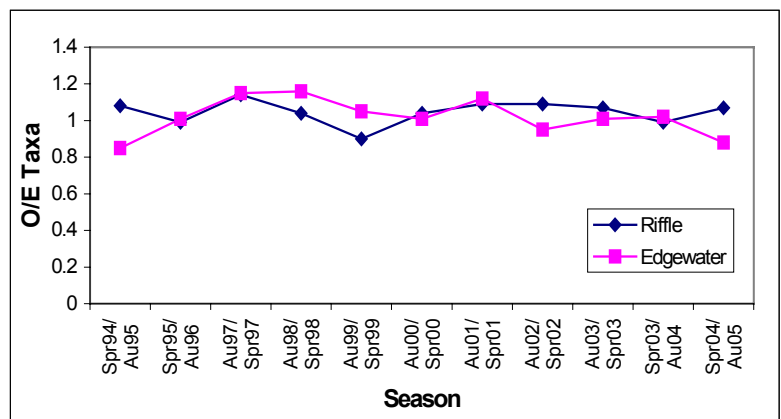


Fig: Combined season AUSRIVAS O/E Taxa scores for the Minnow River upstream of Lower Beulah

Fish River upstream at Mersey Forest Road

The Fish River originates within the Walls of Jerusalem National Park. It flows in a westerly direction descending rapidly before emptying into Lake Rowallan approximately 1 kilometre below the sampling site.

Native vegetation dominates the riparian zone and both banks of the river are relatively undisturbed. There is very little human impact apart from a small camping area on the right bank.

Instream, the site has a high proportion of large boulder and bedrock, making the edgewater habitat marginal, particularly after periods of high flow. Water quality at the site is excellent with nutrients and other physico-chemical variables within expected ranges.

Biological assessments indicate the site is in good condition with macroinvertebrate communities containing taxa typically found in fast flowing escarpment streams such as Blephaceraeidae (net winged midges) Simuliidae (black flies), Leptophlebiidae (mayflies) and Eustheniidae (stoneflies).

Combined season assessments for both habitats yield O/E values in Band A for most assessments. Single season edgewater assessments frequently class this site as significantly impaired (Band B) with O/E scores ranging from 0.68 to 1.05. The low scores are more a reflection of the limited availability of edgewater habitat than any anthropogenic impact.



Fig: Fish River at Mersey Forest Road.

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Au98/ Spr98	0.87	B		NS
Au99/ Spr99	0.91	A	0.86	A
Au00/ Spr00	0.87	A	0.82	B
Au01/ Spr01	0.97	A		NS
Au02/ Spr02	0.92	A	0.86	A
Au03/ Spr03	1.07	A	0.88	A
Spr03/ Au04	1.06	A	0.95	A
Spr04/ Au05	0.97	A	0.95	A

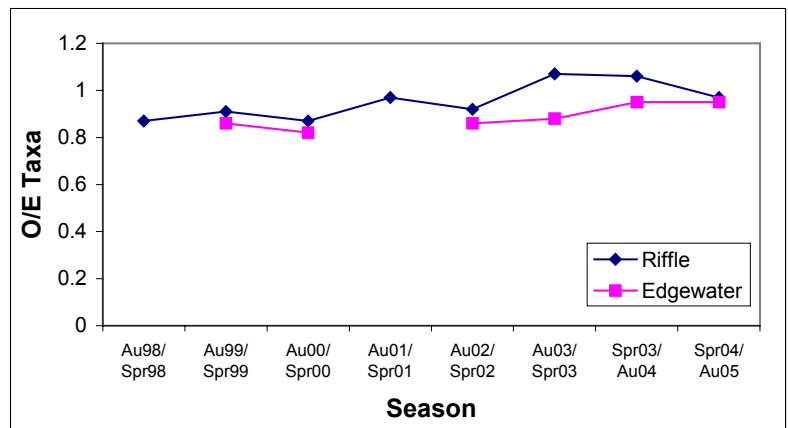


Fig: Combined season AUSRIVAS O/E Taxa scores for the Fish River at Mersey Forest Road.