

Annual Waterways Report

Arthur Catchment

Water Assessment Branch

2009

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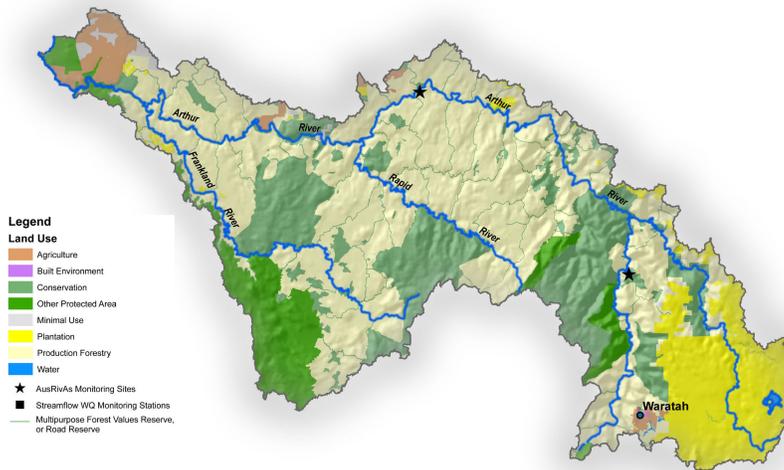
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Arthur Catchment

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1. About the catchment

The Arthur River catchment is located on the north-west coast of Tasmania and is presently used extensively for forestry production and limited agriculture, but in the past has been subject to substantial mining activities at Balfour and Mt Bischoff in the upper region of the catchment. The catchment covers approximately 2,500 km² and drains westward into the Southern Ocean through the small coastal township of Arthur River. The total length of the Arthur River is about 180 km, originating near Waratah in the foothills of Mt Bischoff at an altitude of about 800m above sea level.

The annual average rainfall ranges from about 1000 mm at the catchment outlet to around 2200 mm at Waratah.

2. Streamflow & Water Allocation

Streamflow

There are no streamflow monitoring stations maintained in the Arthur River catchment as part of DPIW's state-wide monitoring.

Water Allocation

The Arthur catchment had a total of 4,330 ML in licensed allocations for 2008. The following table shows the breakdown of the allocations.

	Total Allocation (ML)
Irrigation	1,667
Stock & Domestic	404
Water supply	45
Other	2,214

Of the total licensed water allocation within this catchment, 3,168 ML is held within constructed storages and 1,162 ML is taken directly from rivers and streams.

Water Use Restrictions

There are no water restriction triggers in existence for the Arthur River catchment.

3. 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 two locations in the Arthur River catchment:

- Pykes Bridge; and
- Tayatea Bridge



Fig: Arthur River at Pykes Bridge.

Arthur River at Pykes Bridge

This site is in the upper reaches of the Arthur River, approximately 25 kilometres downstream of the historic mine at Mt Bischoff at Waratah. The mine operated between 1878 and 1945 and has created significant acid mine drainage problems in the Arthur River and its upper tributaries.

The Arthur River at this site is 21 to 24 metres wide and consists of fast flowing riffles and runs flowing over a boulder/cobble substrate. Riparian vegetation is predominantly native and in an undisturbed state with the exception of the now disused picnic/recreational area immediately adjacent to this site. The surrounding land lies within the Murchison forest district and is utilised for timber production.

Although the site is considered to be in good condition as measured by the combined season models (A Band or greater), examination of the single season riffle outputs shows that there is considerable variation in O/E which range from 0.78 (Band B) to 1.21 (Band X). Similarly single season edgewater assessments vary considerable in O/E with a range of 0.59 (Band B) to 1.20 (Band X). The noted variation is most likely associated with rain and higher flows during which there is a rapid influx of highly acidic water into the river which has impacted on the macroinvertebrate fauna.

Name	Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Arthur River at Pykes Bridge	Spr03/ Au04	0.92	A	0.94	A
	Spr04/ Au05	0.9	A		NS
	Spr05/ Au06	0.93	A	1	A
	Spr06/ Au07	0.97	A	1.21	X
	Spr07/ Au08	1.01	A		NS
	Au08/ Spr08	1.03	A		NS

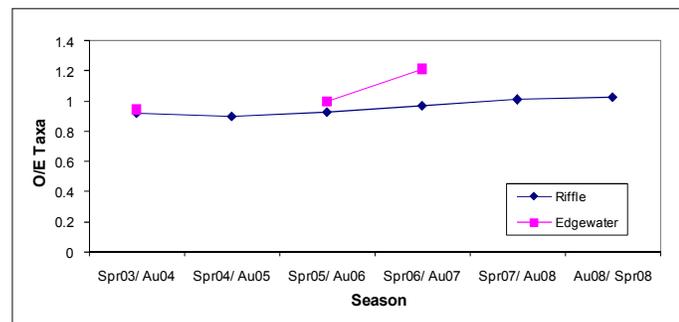


Fig: Combined season AUSRIVAS O/E Taxa scores for the Arthur River at Pykes Bridge.

Arthur River at Tayatea Bridge

This site is approximately 67 kilometres downstream of the site at Pykes Bridge and 14 kilometres upstream of the confluence of the Rapid and Arthur Rivers. This site is located within the production zone of the Circular Head forest district and the surrounding land is used for timber production.

Riparian vegetation is predominantly native and in an undisturbed state with the exception of a small picnic/recreational area immediately adjacent to this site. The river is between 25 to 50 metres wide and consists of fast flowing riffles and runs over predominantly cobble/pebble substrate. There are also sections having a high proportion of bedrock.

Water quality at the site was generally good with all physico-chemical water quality variables within expected ranges. pH values were lower in spring compared to the following autumn. This was due to the influx of acidic water into the river in the upper catchment following rain.

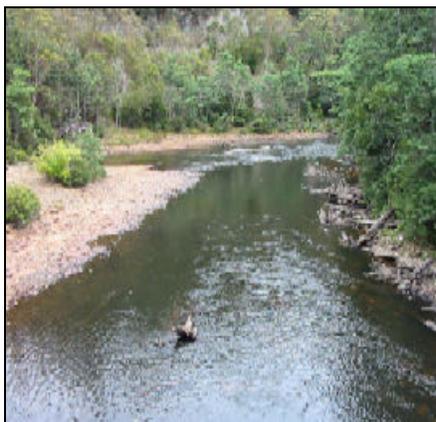


Fig: Arthur River at Tayatea Bridge.

Biological assessments indicate that the site is in good condition with macroinvertebrate communities containing taxa typical of fast flowing rivers. Assessments using the combined season models indicate that the riffle habitat varies between equivalent to reference (Band A) and significantly impaired (Band B) whilst the edgewater habitat remains as equivalent to reference (Band A) condition. Single season AUSRIVAS models consistently returned high O/E values with averages of 0.98 and 1.08 for the riffle and edgewater habitats respectively.

Name	Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Arthur River at Tayatea Bridge	Spr94/ Au95	0.87	A	1	A
	Spr95/ Au96	0.78	B	1.03	A
	Spr03/ Au04	0.89	A	1.14	A
	Spr04/ Au05	1.01	A	1.14	A
	Spr05/ Au06	0.85	B	1.06	A
	Spr06/ Au07	0.8	B	1	A
	Spr07/ Au08	0.95	A		NS
	Au08/ Spr08	0.94	A		NS

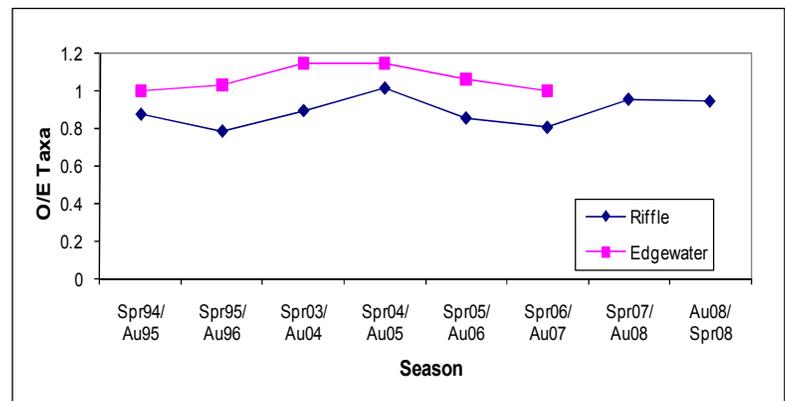


Fig: Combined season AUSRIVAS O/E Taxa scores for the Arthur River at Tayatea Bridge.