

## **Estuary perch –options for future fishery development**

A paper was prepared for IFAC and circulated to members during November 2014; *Estuary perch – discussion paper and options for future fishery development*

Since this paper was written and released there have been few inroads in the development of the estuary perch fishery in Tasmania.

The above paper discussed two issues that involve estuary perch in Tasmania.

### **1. Conserving existing population (s) of estuary perch, including the possibility of re-establishing now extinct historically known populations**

During 2015 Bryan van Wyk produced a dissertation for his honours thesis;

“Reproduction, Growth and Population Dynamics of Estuary Perch (*Percalates colonorum*) in the Arthur River, Tasmania.”

It should be noted that *Percalates* has superseded the former genus name for estuary perch of *Macquaria*. This genus also covers Australian bass *Percalates novemaculeata*.

The study produced the following findings:

- Sampled catches from the Arthur River were dominated (68%) by three strong age classes: 12, 13 and 14 years. Missing, weak and dominant age classes indicate high inter-annual recruitment variability in the Arthur River.
- The abiotic nature of the Arthur River is complex, and recruitment variability is probably controlled by multiple interrelated factors including DO, salinity and larval food availability. The long-term survival of estuary perch in the Arthur River will continue to depend on the reproductive activity of strong age classes until multiple consecutive successful spawning seasons replenish the stock to stable levels.
- Re-stocking is used successfully in Victoria (DEPI 2014, Torrens et al. 2002) to enhance estuary perch fisheries and could prove advantageous in the Arthur River by increasing the strength of juvenile age classes after spawning periods with extreme anoxia. The additional restocking of at least one other waterway which supported estuary perch in the past is also recommended as this population may act as a reserve in the event of an ecological crash in the Arthur River.
- The current population estimate of 1,594 is likely to be underestimated and further mark-recapture efforts are recommended to accurately quantify the population size in the Arthur River.
- Considering the slow growth and extreme recruitment variability of estuary perch in the Arthur River, as well as the restricted distribution in Tasmania, the results of this study suggest that current no-take policies should continue and the Tasmanian conservation status be listed as “threatened”.

The study indicates;

- That Arthur River estuary perch population is predominantly (68%) comprised of older fish (12-14 years of age) with a secondary (28%) group of age classes half their age (4-8 years of age).
- There is not successful recruitment each year and recruitment seems variable even in years where they do successfully recruit.
- The population size was estimated at approximately 1,600 +/- 775 for fish that were targeted using the sampling gear type.

This suggests that the Arthur River population is self-sustaining but not overly secure in the long term. If abiotic factors negatively affecting natural recruitment were to compound for a number of years the population security would be tenuous at best.

A program of restocking Arthur River and establishment of another wild population free from migration impediments would be beneficial to the species long term existence in Tasmania.

The population at Arthur River is probably genetically distinct from mainland populations. Given the tenuous nature of this population a program to use brood stock sourced from there would need to be a carefully managed. Facilities for raising juvenile estuary perch would need to be established in Tasmania before consideration of such a program could occur in order to protect their genetic integrity. There is considerable expertise at University of Tasmania (UTas) in aquaculture. This could be utilised in establishing a restocking program for Arthur River and a second Tasmanian population.

## **2. Establishment of a stocked estuary perch fishery at suitable waters**

The following is an extract from the original paper; *Estuary perch – discussion paper and options for future fishery development* with notes showing where we are currently:

*The Victorian DEPI model of stocking estuary perch outside of their historical range is something that could be considered for Tasmania.*

*Currently some coastal lagoons in Tasmania are stocked with brown and rainbow trout. With changing climatic conditions the suitability of salmonids for these locations will come into question. The estuary perch is ideally suited to coastal lagoons particularly those that were within the specie's historical range i.e. the north and east coasts of Tasmania. Coastal lagoons generally have good populations of *Galaxias* spp., *Retropina tasmanica* and other small fish (juvenile mullet and gobies) that estuary perch would feed on.*

*The following needs to be considered for a stocked estuary perch recreational fishery in Tasmania.*

- *Identification of suitable stock to be used for a Tasmanian program. I.e. Tasmanian stock from the Arthur River or imported stock from genetically similar hatchery originated stock.*

Further work required on this, though as indicated in the original paper there have been studies that show genetic similarities with Western Victorian stocks. Currently there are no estuary perch grown at Narooma Aquaculture, where the Victorian stock is grown, surplus to the needs of the Victorian estuary perch program.

- *Conducting a risk assessment from a biosecurity standpoint of imported stocks to the Tasmanian environment including risks posed to the salmonid industry and recreational fishery.*  
This has not occurred.
- *Identify funding avenues for the establishment and longer term sustainability of a stocked estuary perch recreational fishery.*  
This has not occurred.
- *The feasibility of the culture of estuary perch in a Tasmanian hatchery.*  
Associate Professor John Purser; Deputy Head, Fisheries and Aquaculture Centre and deputy Associate Dean International for IMAS has indicated that UTas could facilitate this as a project for honours or higher degree studies.
- *Identification of suitable waters for stocking estuary perch (not inclusive of re-establishing extinct populations). E.g. Coastal lagoons such as Blackmans Lagoon in north eastern Tasmania.*  
This has not occurred.
- Development of a stocking program that will be suitable to sustain a recreational fishery for estuary perch in Tasmanian inland waters.  
This can only happen once identification of suitable waters occurs. The Victorian model would be a good template for numbers of fish needed to establish viable fisheries.
- *Establishing a management regime that would sustain a stocked estuary perch fishery through its development phase. I.e. regulations that would allow fish to grow to sustain the recreational fishery.*  
The Victorian model would be a good template for establishing a management regime both during and post development phases. This program could inform the implementation of regulations needed to manage the fishery based on actual operation of a similar fishery.
- *Establish a monitoring program of waters stocked with estuary perch.* This would happen once the development of the fishery occurs.

There is a great deal of work required to further the issues of estuary perch in Tasmania. An allocation of resources would be required further these. At present the IFS is developing of a ten year management plan of Tasmanian recreational inland fisheries that is expected to be implemented during 2018. The development of estuary perch fisheries should only occur after this plan is implemented due to resource constraints on the IFS. If there is a will to pursue such resources then there should be a cost benefit analysis of an estuary perch fishery.