Snowy Lakes Trout Strategy Working Group Meeting

Gaden Trout Hatchery, Jindabyne 12 December 2017

Draft Meeting Outcomes

Working group members

Steve Samuels (MAS), Peter Gibson (NSW CFA), Col Sinclair (MAS), Gordon Jenkinson (Jindabyne Chamber of Commerce / MAS), Leon Miners (South East LLS), Alan Basford (Eucumbene Chamber of Commerce).

Observers/presenters

Bruce Schumacher (ACoRF, Gaden Hatchery Management Advisory Committee, A/Chair), Cameron Westaway (DPI),Mitchel Elkins (NSW DPI), Gary Caldwell (NSW DPI), Michael Piontek (NSW DPI) Alison Mclean (NSW DPI), Martin de Graaf (NSW DPI), Nathan Miles (NSW DPI), Charlie Litchfield (Snowy Hydro), Alannah Dickeson (Snowy Monaro Regional Council), Chris Darlington (NPWS), Taylor Hunt (Fisheries Victoria), Bill Leane (Adaminaby Progress Assoc & Chamber of Commerce), Rod Whiteway (MAS Secretary), Craig Watson (DPI), Tom Williams (RFFTEC), Nathan Reynoldson (NSW DPI).

Apologies

Dr Geoff Allan (NSW DPI), Peter Turnell (Chair), Garry Green (DPI), Murray Ogilvie (local tackle proprietor), Eric Burns (MAS & tackle proprietor), Bruce Easton (Snowy Tourism), Luke Pope (South East LLS).

1. Chair's introduction

Bruce Schumacher opened the meeting and welcomed working group members and observers.

2. Confirmation of outcomes from previous meeting

The draft outcomes of the previous Snowy Lakes Trout Strategy Working Group meeting were accepted as a true and accurate record of that meeting, Moved Peter Gibson, Seconded Tom Williams.

3. Action items from previous meeting

The progress of action items from the previous meeting was noted.

4. Gaden Trout Hatchery Report

Mitchel Elkins, Assistant Hatchery Manager Gaden, advised that 3 new staff members had joined the hatchery team. There was a favourable run of Brown Trout in the Thredbo River with the full complement of ova obtained by the end of July. Captive females were used to compliment wild females caught in the Thredbo River during the Rainbow Trout spawning run. Ova were also collected from Tolbar and Hughes Creeks, tributaries of Lake Eucumbene, for genetic variation of the captive broodstock. Fertility rates ranged between 72-93%, with a targeted release of 1.04 million in 2017/18. Tagging and fin-clipping of rainbow trout fingerlings has been carried out with the assistance of volunteers in January. During 2017/18 a total of 150,000 Rainbow Trout fingerlings were stocked into Lake Eucumbene of which 37,500 (25%) were fin clipped. Fish production figures for 2014/15 and 2015/16 (so far) are summarised as follows:

Atlantic Salmon

- 107,668 were released in 2016/17. In 2017/18, 150,000 Atlantic Salmon ova laid down with a 75% fertility. Dr Stewart Fielder (Research Scientist, Port Stevens Fisheries Institute) has again expressed interest in acquiring Atlantic Salmon fingerlings for continued research into sea lice vaccine.

Brook trout

- 62,500 were released in 2016/17. In 2017/18, 100,000 ova laid down with a 72% fertility success rates. A total of 14,000 fingerlings have been sold for private dam stocking and an additional 1200 provided to Denison College for their aquaculture program. Revenue received from Brook Trout $1810

Brown trout

- 237,650 were released in 2016/17/. In 2017/18, 1,378 fish captured for production; an additional 869 Brown Trout trapped & released during the Rainbow Trout trapping period. In 2017/18 400,000 ova laid down with a 93% fertility success rate. 500,000 ova was supplied to Dutton Trout Hatchery to enable fry stocking in the New England region.

Rainbow Trout

- 645,050 were released in 2016/17. In 2017/18, 366 fish captured for production (208 males and 158 females). 900,000 ova laid down with a fertility success rates of 77%. 300 Rainbow trout fry were sold to stock a private dam adjacent to the MacLaughlan River. Total revenue received from Rainbow Trout $205.

Gaden Hatchery staff conducted grow out trials to produce larger fish by using warmer water during the development of ova, alevins and fry. Warmer temperatures were successfully used with three stages of egg development that showed increased growth rates for juveniles. The fish stocking program can potentially be brought forward by accelerating growth of early spawning fish; namely Atlantic Salmon and Brook Trout. This will then provide increased hatchery space for development of Brown Trout and Rainbow Trout, which spawn later in the season. Further hatchery infrastructure i.e. recirculation technology, is needed to make considerable advances to fish production. Re-circulation systems enable water use, water temperatures and water quality to be controlled, a direct measure to reduce reliance on water and to address predicted effects of variable river flows from climate change. They also

provide a superior method for holding / growing fish ranging from ideal pH levels to desirable oxygen levels as well as the critical issue of warmer water temperatures during early maturation to speed up growth and conditioning, as well as providing cooler water temperatures during the warmer periods. They will also help to provide a sufficient buffer of broodstock against any extreme conditions to ensure continued fish production into the future.

5. Trout Fisheries Compliance

Michael Piontek, District Fisheries Officer Monaro, presented a summary on the trends in fisheries compliance within the region. The use of real time reporting and Nautilis database updates has allowed for analytics of compliance activities. This enables a more detailed overview of the region, highlight non-compliance hotspots through spatial mapping and an analysis of date, time, gender, age, offence etc. Major operations in the district included the trout closure operation, trout opening and Snowy Mountains trout Festival. The main offences detected in the Monaro district were: fail to have official receipt in immediate possession, failing to pay fishing fee, and take fish in contravention of a fishing closure. Most offences are reported between May and June on a Sunday between 10:00am and 13:00pm. Offences have been increasing since 2010 with the demographic of offenders being males between the age of 20-35 and 55-59.

6. Snowy Mountains Tourism

Members of the SLTSWG noted a major decline in recreational fishing activity in recent years, which had negatively affected tourism and local businesses. Newly elected members on the Snowy Monaro Regional Council may not be cognisant of the large social and economic importance of trout fishing to the region. There is a perceived need to update Council on what recreational fishing provides to the area and the need for more exposure of recreational fishing values and benefits. Bill Leane stated that many long standing Snowy residents appear to have left the region and that new arrivals appear to lack a passion for the area and what is has to offer. Bill suggested that a code of practice could be developed to educate recreational users on general etiquette standards within the region.

7. Recreational catch monitoring results, Lake Eucumbene

Martin de Graaf, Research Leader for Freshwater Ecosystems, reported on the status of the Lake Eucumbene trout fishery. Martin presented the results and the report is currently available. A creel survey was conducted from one third of Lake Eucumbene's surface area between November 2015 and Jan 2016. The survey interviewed 553 fishers and indicated that effort doubled shore based fishing over boat fishing. Lure fishing method dominated boat based fishing while bait and fly dominated shore based fishing. Catch rates showed that Rainbow Trout had a higher catchability; however it does not necessarily indicate that Rainbow Trout biomass is greater. The composition of species and release rate showed that 71% of the harvested fish were Rainbow Trout compared to 29% Brown Trout and that of the fish that were released 62% were Rainbow Trout and 38% Brown Trout. The majority of the released fish was done voluntarily.

8. Spawning run/age & growth monitoring research

Nathan Miles, newly appointed Fisheries Scientist, reported on the Snowy Lakes trout monitoring program. Both Brown and Rainbow Trout had increased in numbers during the spawning run at both Lake Eucumbene and Lake Jindabyne from the previous year. All stocked fish in Lake Jindabyne had been tagged with a coded wire tag with 26 tags being detected in the 2017 spawning run. A result of 8.3% of the spawning run coming from stocked fish (7.3%) and broodstock (1.1%). Of those stocked spawning fish 27% were 2 year old fish, 65% 3 year old fish and 8% 4 year old fish. Average length and weight of spawning Brown and Rainbow Trout was the smallest on record. Results from the Snowy Mountains Trout Festival has shown a decrease in stocked recaptures 2015 = 42%, 2016 = 34% 2017 = 31% with 2yr old fish dominating catches.

One quarter of the fish stocked into Lake Eucumbene were stocked with a coded wire tag, with 7% of 2017 stocked fish captured in the spawning run. The average length and weight of both species had decreased and the condition of both species was low. A low number of stocked fish were re captured in the spawning run and these were dominated by the 2yr old fish. A limnology study had been investigated, with 2 students showing initial interest however later withdrawing from the project. To progress this issue further it is proposed that the limnology study will be divided into more workable projects, so that masters and honours students can undertake shorter high impact studies on: food availability and diet, productivity, temperature and lake levels.

9. Denison camp area & Snowy Hydro 2.0

Charlie Litchfield reported on the feasibility of the Snowy 2.0 project. The project proposal is to develop a new underground hydroelectric power station and a reversible pump station between the existing Tantangara and Talbingo Dams through a series of tunnels. Tantangara dam would be used as a head pondage with an incentive to keep levels in Tantangara higher and Talbingo be used as a tail pond. Some key impacts addressed included access to lakes, transfer of redfin, impacts to lakes during construction impacts of operation. Pending the feasibility study, an Environmental Impact Statement would be conducted to address issues surrounding, archaeology, terrestrial ecology, water quality, aquatic ecology, hydrology, groundwater and recreational impacts. These impacts would be determined by NSW agencies.

Investigations confirm that Redfin are present in Talbingo but are absent in Tantangara. Further investigations into the survival of Redfin through the proposed pipeline could not exclude the possibility that some eggs / fish may survive the trip through the pipeline. Options are being investigated to prevent Redfin from entering the pipeline. The Eucumbene River vehicle management program was completed in 2017 which incorporated the construction of a carpark, installation of a gate, vehicle pollards and advisory signage. The project has provided continued access for recreational fishers and protected the shoreline vegetation. Disabled access was arranged through obtaining a key that allows people with disabilities to gain access to public facilities.

10. Lower Thredbo Valley Track proposal

Chris Darlington and Alannah Dickeson provided an update on the project to link the shared-use Thredbo Valley Track (TVT) from Thredbo to Jindabyne. The project aims to provide a range of community benefits by enabling more people to enjoy the unique environment in the Snowy Mountains. The track will be utilised for recreation (hiking, mountain biking and fishing) and follow the northern side of the Thredbo River. It will increase visitation to Kosciuszko National Park and will attract events that will increase tourism revenue into the

local economy. The track will likely be complete to approx. 5km upstream from Gaden by June 2018.

The Snowy Monaro Regional Council and the National Parks and Wildlife Service (NPWS) are currently working with community stakeholders and government to seek approval and funding to complete the project in the next two years. As part of the link from Thredbo Valley to Jindabyne a bridge-crossing is required over the Thredbo River. There were numerous options for the bridge crossing including: crossing was at Gaden hatchery or Paddys Corner with an underpass on the Kosciusko Road or crossing at the Kosciuszko Rd with a link around the foreshore. The TVT will provide a great opportunity to increase visitation at the hatchery however the public amenities block and car park area adjacent to the Gaden hatchery may need to be updated to accommodate increased visitation to the site. The issue of security around the Gaden hatchery and the safety of the public and stock with an increased use of Gaden Road will also need proper consideration e.g. upgrading fencing along the hatchery / picnic area boundary, to prevent public access to hatchery grounds and ensure ongoing protection / safety of hatchery stock. The NPWS advised that the issue of public access will form part of the overall project plan and funding submission to ensure public safety.

11. Victorian Trout Management Program

Taylor Hunt from Fisheries Victoria gave a presentation on the Victorian Trout Management Victoria has faced issues similar to NSW where climate and habitat are major influences on fishery performance. Victoria has also experienced poor trout fishing in recent times with multiple theories including: high water temperatures, low flows, changes to streamside shading, overfishing, stocking, failed recruitment, predation by cormorants, competition with other species. The Wild Trout Fisheries Management Program incorporates research, monitoring, engagement and stocking.

Research has involved a trout tracking study to determine if warm water temperatures are adversely impacting river trout fisheries. Acoustic receivers have been installed in the Deletite River along with temperature loggers and 100 brown trout have been implanted with acoustic tags. Results show that large Brown Trout tend to move upstream when water temperatures increase. A fishing pressure study has also been conducted to determine if recreational fishing is adversely impacting trout populations. A total of 100 externally tagged yearling Brown Trout with a $100 reward were stocked into the Deletite River. Over 3000 anglers were surveyed with only 3 recaptures, which shows that stocking yearling Brown Trout is not effective in self-sustaining rivers.

Monitoring has included population surveys at 12 priority rivers over 3 years and the development of site scorecards that rank key health indicators including: recent recruitment, multiple size classes and presence of mature fish. A streamside vegetation study is being conducted which has found that average water temperatures in the Deletite River have increased by over 2^0C since 2005 and as a result increased streamside shading is required to buffer temperatures. Community engagement is key part of the program whereby anglers are developing habitat projects through CMA's to enhance streambank riparian coverage. New trout regulations have also been introduced including a minimum size of 25cm and bag limit of 3 in iconic rivers, removal of trout closed season at rivers where there is no recruitment with a 45cm minimum size limit and a reduced bag limit at lakes which are renowned for growing large trout.

12. Review of Snowy Lakes Trout Strategy

a. Fish stocking

The issue of stocking fingerlings vs larger heat controlled sub adult fish into Lake Jindabyne was discussed. The SLTWG considered that larger older fish will often migrate to and occupy lake systems whereas smaller younger fish often remain in rivers until they have put on size and condition. Hence the survivorship of stocked larger heat controlled fish stocked into the lake should be greater than fingerlings. The SLTWG recommended that the existing annual allocation of 75,000 fingerlings be reduced to 10,000 fish grown from the warm water experimental trials and stocked at a larger size. While this would result in a significant reduction in overall numbers stocked, the stocking success should increase as larger fish are thought to better adapt to lentic environments.

Subsequent to the meeting there was extensive consultation with stakeholders and DPI Fisheries determined that the existing allocation of 75,000 fingerlings at Lake Jindabyne will continue at this stage, of which 10,000 fish will be on-grown, together with an additional 10,000 fish which will be heat-treated and on-grown. The stocking allocation at Lake Jindabyne will be re-evaluated in light of research into the survival success of releasing advanced thermal controlled fish in comparison to fingerlings. The SLTWG recommended that allocations for Atlantic Salmon and Brook Trout be reduced from 100,000 fish per annum to 10,000 fish per annum to provide additional space in the hatchery to rear fish for stocking into Lake Jindabyne. The SLTWG recommended that the existing fish stocking management arrangements for Lake Eucumbene and Tantangara Dam be maintained.

b. Trout spawning closures

The SLTSWG noted that Rainbow Trout appear to be spawning later into the season in tributaries in spawning rivers of Jindabyne (Kalkite Creek, Eucumbene River, Wollondibby Creek) and Eucumbene (Big Tolbar Creek, Little Tolbar Creek and Hughes Creek). The SLTSWG proposed that a new temporary trout water type “Experimental trout spawning streams” be introduced from 1 May in conjunction with research, to determine the timing and length of the spawning season to protect trout spawning habitat. RFNSW considered this issue out of session and formerly in a subsequent meeting. Noting correspondence from stakeholders in regards to potential impacts of spawning closures on local business, fishing guides, etc. it was determined that this issue should be considered through the forthcoming trout strategy.

c. Bag, size and gear limits

The SLTSWG discussed a prohibition in the use of treble or double hooks in trout spawning streams to reduce the possibility of inadvertent hook injuries to trout during the spawning season. There was further consultation with RFNSW on this issue subsequent the meeting. A number of issues e.g. regulation and enforcement complexity, implications for local tackle suppliers etc. had since come to light which required further investigation. There was a tight time frame to properly advertise new fishing rules to avoid public confusion over the purpose fishing gear changes. Subsequently, RFNSW recommended that the issue be considered through the forthcoming trout strategy. Changing the rule to limit the size of double or treble hooks could also be considered as an alternative. A media campaign could be initiated to highlight this issue, noting that jagging or foul hooking is an offence pursuant to Clause 53 of the FMGR 2010.

13. General business

Funding for a state wide trout strategy had been made available which will endeavour to respond to a range of issues of concern for the recreational trout fishery and will set out management actions designed to support high quality trout fisheries. The strategy framework is being developed with consultation anticipated to commence mid-2018.

Mr Samuels discussed the possibility of installing fish cages in Lake Jindabyne for the purpose of growing out fish at a larger size before release to enhance stocking success. Lake temperatures are considered warmer over the winter months than river temperatures, which may enhance growth rates of juvenile fish. It would also alleviate space constraints at the hatchery and allow it to increase production of larger fish and overall numbers of fish stocked. Mr Westaway noted that fish cage infrastructure comes with large investment and operating costs and an environmental impact assessment would be needed for potential localized water quality problems, disease hazard, predator problems and compliance issues. Approvals from Snowy Hydro would also be required as the lake is primarily set up for power generation and irrigation purposes rather than aquaculture/fish farming.

Mr Whiteway raised concerns about the number of horses in the Kosciuszko National Park and that increased erosion of river banks form horse activity was disrupting trout spawning habitat. Michael Piontek noted the possibility of using instream incubators (Vibert Boxes) to increase space for more fish at Gaden hatchery. Taylor Hunt noted that Fisheries Victoria is currently trailing instream incubators. Preliminary results suggest that incubators work best in areas where trout recruitment does not exist.

14. Meeting closed

The Chair declared the meeting closed at 15:00pm.

15. Action items

Action items	Responsibility	Status
1. Presentation to Snowy Monaro Regional Council about the fishing industry in the region.	Steve Samuels	Completed
2. Present proposed Snowy Lakes management program changes (relating to fish stocking, spawning closures and gear limits) to RFNSW for consideration	RFNSW, Recreational Fisheries Management	Completed

16. Snowy Lakes Trout Strategy - table of issues and management responses

Fish Stocking

Lake Eucumbene

Objectives	Annual stocking
1. To be managed as the premier enhanced wild trout fishery in NSW and to remain a wild brown trout and stock enhanced rainbow trout fishery 2. To maximise catches of fish in the range of length from 40 to 50 cm and weights from 1 to 2 kg	Rainbow trout: 150,000 fingerlings

Lake Jindabyne

Objectives	Annual stocking
1. To be managed as a high stocking and high catch rate mixed species salmonid fishery aimed at the tourist 2. To achieve predominant catches in the range from legal size (25 cm) to 40 cm and weight up to 1 kg	Rainbow trout: 75,000 fingerlings, 10,000 of which are on-grown A further 10,000 fingerlings which are heat-treated and on-grown Atlantic salmon: 10,000 fry Brook trout: 10,000 fry Excess brood stock of all species (if available)

Tantangara Reservoir

Objectives	Annual stocking
1. To remain a predominantly wild brown trout fishery aimed at the angler seeking greater isolation and solitude. 2. To allow average sizes to fluctuate according to natural recruitment levels and lake productivity.	No stocking, reliant on natural recruitment.

Three Mile Dam and Dry Dam

Objectives	Annual stocking
1. To be managed as boutique brook trout fisheries 2. To achieve catches in legal size (25 cm) and weight from 0.5 kg	Brook trout: 2,000 fry (Dry Dam) Brook trout: 5,000 fingerlings (Three Mile Dam) Rainbow trout: 2,000 fingerlings (Three Mile Dam)

Trout spawning closures

Thredbo River

Description	Closure period
The whole of the Thredbo River except for a signposted 2.4 km reach at Gaden Trout Hatchery to be managed as a fly and lure only trophy fish fishery with anglers permitted to keep 1 fish over 50 cm in length during the 1 May to end of June long weekend spawning period.	1 May until end of June long weekend
The sign posted 2.4 km reach of the Thredbo River to remain closed to fishing.	All year round

Eucumbene River

Description	Closure period
The Eucumbene River to be managed as a fly and lure only trophy fish fishery with anglers permitted to keep 1 fish over 50 cm in length during the 1 May to end of June long weekend spawning period. The arrangements to apply to the Eucumbene River and its tributaries upstream of the Lake Eucumbene dam wall and including Providence Portal (excluding the backed up waters of Lake Eucumbene).	1 May until end of June long weekend

Bag, Size and Gear Limits

Waters	Bag, size and gear
General trout dams	Bag limit of 5 fish over 25 cm per person per day and a possession limit of 10 fish per person. 2 attended rods with line and no more than 2 hooks attached when using bait or no more than 3 hooks attached per line when using artificial flies or lures.
General trout streams	Bag limit of 5 fish over 25 cm per person per day and a possession limit of 10 fish per person. 1 attended rod with line and no more than 2 hooks attached per line.
Artificial fly and lure streams	Bag limit of 2 fish over 25 cm per person per day and a possession limit of 4 fish per person. 1 attended rod with line with artificial fly or lure only and no more than 2 hooks attached per line.
Trout spawning streams	Bag limit of 1 fish over 50cm per person per day and a possession limit of 2 fish per person. 1 attended rod with line with fly and lure only and no more than two single hooks attached per line.
General inland waters	Bag limit of 10 fish over 25 cm per person per day and a possession limit of 20 fish per person. 2 attended rods with line or hand lines and no more than 2 hooks attached per line.

17. Research & monitoring

MONITORING

Program	Description	Priority (rank)	Funding	Future	Comments
Age & Growth	Monitoring condition and age of fin-clipped /tagged trout in the spawning runs of the Thredbo and Eucumbene rivers		RecFishTrust 1 JUL 2015 - 2018	Pending RecFishTrust proposal 2018-2021	
Spawning run	Monitoring rainbow and brown trout spawning run in Thredbo (trap) and Eucumbene (electrofishing) rivers		RecFishTrust 1 JUL 2015 - 2018	Pending RecFishTrust proposal 2018-2021	Suitability of current methods as indicator for spawning run strength needs to be evaluated
Recreational fishery	Monitoring catches to determine trends in species composition, length, weight, catch rates, effort & motivation in Lakes Eucumbene, Lake Jindabyne, Lake Tantangara and rivers: • creel survey (Eucumbene), • tournament & angling club surveys (all lakes and spawning rivers) • citizen science [app] (all lakes and spawning rivers)		RecFishTrust 1 JUL 2015 - 2018	Pending RecFishTrust proposal 2018-2021	Development tournament surveys and citizen science are planned activities for 2018-2021 and are not part of the current 2015-2018 RecFishTrust project
Angler visitation	Monitoring the number of visiting anglers to the Snowy Lakes region.			No funding allocated	Collaborate with tourism bodies to develop useful indicators to monitor visitation numbers (e.g., number of overnight stays for angling purposes).

RESEARCH

Program	Description	Priority (rank)	Funding	Future	Comments
Limnology	Development of indicators (and model) to predict trout populations/carrying capacity using temperature, lake level fluctuations, food		RecFishTrust 1 JUL 2015 - 2018	No funding allocated	If useful indicators can be developed, they may be added to Monitoring in the future.
Habitat and Recruitment	Development of indicators of recruitment (habitat, eggs, larvae, juveniles).			No funding allocated	If useful indicators can be developed, they may be added to Monitoring in the future.
Habitat and Recruitment	Determining the timing and length of the spawning season in streams with extended closures.			No funding allocated	Linked to the extension of the closures in the selected small ancillary spawning streams.
Habitat and Recruitment	Spawning habitat survey to determine key spawning streams and possible sites for habitat restoration.			No funding allocated	Linked to the extension of the closures in the selected small ancillary spawning streams.
Stocking protocol	Does stocking fewer larger fish give a better return?				Partly linked to Age & Growth in pending RecFishTrust proposal
Stocking protocol	Do juveniles originating/stocked from rivers perform better than juveniles stocked in a lake?				Partly linked to Age & Growth in pending RecFishTrust proposal