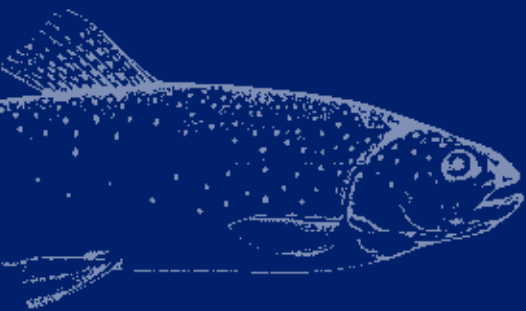


**Inland
Fisheries**
SERVICE



Western Lakes Wilderness Fishery

November 2002



F I S H E R Y M A N A G E M E N T P L A N

W E S T E R N L A K E S

**Inland
Fisheries**
SERVICE



WESTERN LAKES
FISHERY MANAGEMENT PLAN

November 2002

Executive Summary

Introduction

This fishery management plan is a subsidiary plan under the Tasmanian Wilderness World Heritage Area Management Plan (WHA plan). The plan covers all areas of responsibility for which the Inland Fisheries Service (IFS) has statutory control; freshwater native species, freshwater recreational fisheries, and freshwater commercial fisheries. The plan also makes several recommendations on land management issues for consideration by the Parks and Wildlife Service (PWS). The area covered by the plan includes the Central Plateau Conservation Area west of the Lake Highway and the Walls of Jerusalem National Park, both of which lie within the Tasmanian Wilderness World Heritage Area.

Environment

This section examines the impacts of users (primarily anglers) on the environment and specifically water quality, and how these impacts can be minimised while maintaining angling opportunities.

Management prescriptions focus on monitoring and review of water quality and the impacts of boating, wading and weir construction in various waters, and where necessary, implementing remediation measures. An information and education approach with the particular emphasis on the use of signage, will play an important role. Establishment of alternative boating access outside of the Western Lakes, development of a boating code of practice and review of current boating regulations will assist in minimising boating impacts. Additionally, the IFS will encourage and support studies that examine the impacts of boating and wading.

Existing weirs within the Nineteen Lagoons are to be identified and assessed, and if appropriate they will be maintained or removed as required.

Invertebrate Fauna

The Western Lakes possesses a diverse aquatic invertebrate fauna with many unique and endemic species. Elements of the fauna that are of interest are the mountain shrimp and the burrowing crayfish.

Management prescriptions focus on accessing funding and supporting projects that concentrate on the identification and distribution of key invertebrate species or communities, and the impact of trout on native aquatic fauna. Protection of high conservation value waters will be aided by developing a register and establishing fauna reserves.

Native Fish Management

The protection and conservation of the Tasmanian galaxiid fauna is a high priority. Within the Western Lakes, four species of galaxias occur. Under the *Tasmanian Threatened Species Protection Act 1995*, the western paragalaxias is listed as rare while the Clarence galaxias is listed as endangered under both State and Commonwealth legislation. The greatest threat to native fish conservation is from introduced species. Management prescriptions relating to this issue are contained within the Pest Species Management section of the plan.

Prescriptions for management of native fish, focus on fulfilling the requirements of the Recovery Plan for the Clarence galaxias and establishing a program to study the distribution, life history and habitat requirements of the western paragalaxias. This work will be supported by a public information and education campaign for threatened fish species. Key waters are to be identified for the surveying of the population status of the western paragalaxias and monitored as appropriate. A monitoring and removal program to eradicate trout from Johnsons Lagoon to protect the Clarence galaxias will be undertaken.

Recreational Fisheries Management

Given the increase in visitation to the Western Lakes over the past ten years, maintenance of sustainable catch rates, fish quality and overall angling experience are of primary importance. Natural recruitment of wild stocks is the mainstay of the fishery and preservation of this status is a high priority. The best results for the fishery can be achieved by adopting meaningful size limits and bag limits, in conjunction with a prudent stocking strategy. The provision of alternative angling opportunities within the Nineteen Lagoons will aid in conserving fish stocks at more highly valued waters and assist in decreasing fishing effort at popular waters.

Stocking within the Nineteen Lagoons will primarily consist of wild brown trout at stocking rates that recognise the natural attributes of individual waters, and the expectations of anglers. In most cases no stocking will be required. In waters where stocks are limited, lower bag limits and appropriate size limits will be applied to protect the angling values of those waters. Some minor stockings of rainbow trout will be undertaken in selected waters. Stocking and the performance of selected waters will be assessed as part of a fishery performance assessment program. This program will use creel surveys, postal questionnaires and in-lake trout population surveys to assess fishery performance and to adjust management of the fishery.

Within the Greater Western Lakes and the Upper Mersey Lakes Rainbow Fishery, stocking will only be undertaken in special cases, using wild strains of brown or rainbow trout only, except for Clarence Lagoon which is to remain a dedicated brook trout fishery.

All waters within the Western Lakes except for lakes Augusta, Mackenzie and Kay and existing fly only waters, will be designated artificial lure only. Lake Kay will be the only additional fly fishing only water. Bait fishing with a single hand-held rod with specified non-aquatic baits, will be permitted in lakes Mackenzie and Augusta only.

An all-inclusive daily bag limit of five fish, consisting of no more than two fish over 500 mm will apply for all areas within the Greater Western Lakes and the Upper Mersey Lakes Rainbow Fishery. Within the Nineteen Lagoons, bag limits for individual waters will apply, with no more than a combined total of five fish per day to be kept from the Nineteen Lagoons area.

Fishery compliance requirements will be determined by development of an annual compliance strategy. Key components of this strategy will be to improve community awareness and education, ensure anglers are licensed and that they are compliant with angling regulations.

Fishing from a boat while under-power will be permitted in those lakes as specified in the WHA plan. In all other waters, fishing from a boat while under-power will not be permitted. Fishing from a boat (whether motorised or not), will not be permitted at some waters within the Nineteen Lagoons.

The angling season for the Nineteen Lagoons and Greater Western Lakes will be August to April inclusive. The angling season for the Upper Mersey Lakes Rainbow Fishery will be October to May inclusive.

Pest Species Management

The establishment of a pest fish species within the Western Lakes would have major consequences for fisheries management and threaten a number of endemic fish and aquatic invertebrate species, and potentially destroy the reputation of the area as a world class trout fishery.

In general, management prescriptions focus on preventing unwanted introductions via stocking (both illegal and legal) and the use of live baits. As a priority, the IFS is to complete a fish translocation policy with particular reference to reviewing the process for farm dam stockings and fish rearing units. The IFS stocking protocols are also to be reviewed to minimise the risk of possible translocation.

The Inland Fisheries Act and Regulations will be reviewed to ensure that appropriate controls exist to prevent the illegal possession of fish and impose high penalties for such breaches.

Surveys will be undertaken to determine the distribution of pest fish species, ensuring security of in-stream barriers and assessing the risk of introduction at waters adjacent to the Western Lakes.

In general, fish sourced from commercial fish farms or rearing units will not be used for stockings within the Western Lakes. All diploid brown or rainbow trout are to be sourced from wild stocks.

Support for the current public information and education campaign regarding introduced pest species will be continued and stronger links will be established with the Australian Quarantine Inspection Service.

Access and Infrastructure

While fisheries management is the primary focus of this plan, other issues indirectly related to the fishery, such as access, camping and associated support infrastructure are considered. Recommendations are made for consideration by the PWS for inclusion in the WHA plan during its review in 2004.

Fundamentally, prescriptions relating to 4WD tracks recommend maintaining access as per current management arrangements, as stated in the 1999 WHA plan. There is a strong reliance on the monitoring of tracks and boating activities within the area. A track maintenance program for the Pillans/Julian track is recommended.

It is also recommended that the IFS in conjunction with the PWS adopt a strategic approach to educate and inform anglers using signage at strategic locations.

The IFS will assess current boat launching sites and where appropriate, apply for Marine and Safety Tasmania funding to assist in maintaining facilities. Recommendations are made to maintain boating access at Double Lagoon for smaller boats only.

Further recommendations are made to continue free range camping, and to review the need for toilet facilities within the Nineteen Lagoons. Fuel stove only regulations are recommended for all areas within the Western Lakes.

The plan recommends that proposals for aerial access should fully meet the conditions as set out in the WHA plan.

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1.0 Plan Area, Legislative Basis and Zoning

As a prescription within the 1999 Tasmanian Wilderness World Heritage Area Management Plan (WHA plan) (PWS 1999), the Inland Fisheries Service (IFS) is required to complete a fishery management plan for the Central Plateau Conservation Area (CPCA). This plan fulfills that requirement and is a subsidiary plan under the WHA plan. However, as the CPCA covers a large proportion of the Western Lakes fishery, the planning area has been expanded to include the CPCA and the Walls of Jerusalem National Park, which collectively form the Western Lakes (refer map 1).

The Western Lakes fishery encompasses a region within the Tasmanian Wilderness World Heritage Area (WHA) of approximately 140 000 hectares. The area contains a vast network of highland lakes, tarns and streams. The aquatic environment is ecologically highly significant with numerous species present, some of which are endemic. The region also sustains a unique recreational trout fishery of world standard that is valued for its wilderness environment and self-sustaining brown trout population. Over the past 10-15 years, the Western Lakes trout fishery has become increasingly popular, largely due to the growing popularity of fly fishing, for which the waters of the area are highly suited. For fishery and land managers, the increased popularity of the area presents a range of management issues that need to be addressed if the environmental, cultural and economic values of the region are to be maintained and enhanced.

The IFS is the Government body responsible for policy, planning and management of freshwater fisheries. The IFS performs these functions under the provisions of the *Inland Fisheries Act 1995* and includes:

- freshwater native species including threatened freshwater fish;
- freshwater recreational fisheries; and
- freshwater commercial fisheries.

The Parks and Wildlife Service (PWS) is the Government agency responsible for managing the land area of the Western Lakes (CPCA and Walls of Jerusalem National Park) under the *National Parks and Wildlife Act 1970*. This is achieved with guidance provided by the WHA plan. Several issues relating to land use, such as access and camping are considered in this plan, however, any change to land management practices will first need to be considered by the PWS within the context of the WHA plan. The IFS and the PWS have liaised closely over these matters to achieve desirable outcomes for the future sustainable use of the area.

The Western Lakes Management Region Defined

The definition of the Western Lakes area as outlined in the *Inland Fisheries (Recreational Fishing) Regulations 1999*, overlaps with various land tenures and administrative boundaries. Additionally, the area does not include several headwater streams that feed the major lake systems of the region. In order to be consistent with other planning areas, and to tie land tenure with catchment areas, the current Western Lakes boundary is to be altered. The new boundary will include the CPCA west of the Lake Highway and the Walls of Jerusalem National Park (refer map 1).

A small section of the CPCA that lies east of the Lake Highway and north of Great Lake will be covered in the fishery management plan for the Great Lake.

Recreational fisheries management within the Western Lakes will be based on three separate fishery management zones, as shown on map 1.

- Nineteen Lagoons Fishery
- Greater Western Lakes Fishery
- Upper Mersey Lakes Rainbow Fishery

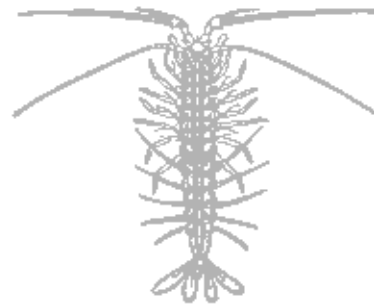
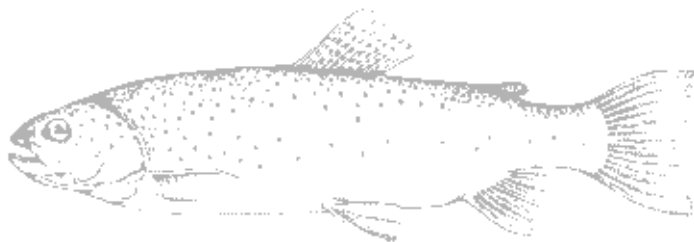
This management plan addresses all areas of responsibility of the IFS under the *Inland Fisheries Act 1995* and will remain in place for a period of five years. During this period, changes to the plan may be made by the Minister responsible for inland fisheries, usually following receipt of a written submission as outlined in Section 12.3.

2.0 Plan Development and Consultation Process

As the first stage in the consultation process for development of the Western Lakes Fishery Management Plan, a two-day stakeholder reference group workshop was held. Workshop members represented a wide range of stakeholder interests, including anglers, conservation, tourism, trout guides, fisheries management professionals and the World Heritage Area Consultative Committee. The primary purposes of the workshop were to identify issues, develop a vision for the Western Lakes fishery and discuss management options to encompass the vision.

Using input from the reference group workshop, as well as discussions with the Inland Fisheries Advisory Council (IFAC) and PWS, the IFS with consideration of its statutory responsibilities, prepared an Issues and Options paper for public comment. The Issues and Options paper was released for public comment for a period of six weeks. At the end of this period, submissions were collated and used during development of a draft plan. The draft plan was released for public comment for eight weeks during which time three public meetings were held around the State. Comments received during the draft plan consultation phase have been considered in developing this final plan.

Throughout the process, IFAC has offered advice on the plan's content and ensured that the planning process has been conducted in an open and fully consultative manner.



3.0 Legislation and Guiding Documents

The fishery management plan should be consistent with all relevant legislation so as to avoid conflict and be acceptable to the wider community. The following documents have guided the formation of the plan:

- Inland Fisheries Act 1995;
- Inland Fisheries Regulations 1996;
- Inland Fisheries (Recreational Fishing) Regulations 1999;
- National Parks and Wildlife Act 1970;
- National Parks and Reserve Regulations 1999;
- Threatened Species Protection Act 1995;
- Tasmania's Nature Conservation Strategy 2001 (Draft);
- Water Management Act 1999;
- A Wetland Strategy for Tasmania 2000 (Draft); and
- State Policy on Water Quality Management 1997.

The fishery management plan should be consistent with all relevant management plans, including:

- Tasmanian Wilderness World Heritage Area Management Plan 1999;
- Walking Track Management Strategy 1999; and
- Recovery Plan for the Pedder, Swan, Clarence, swamp and saddled galaxias 1997.

Inland Fisheries Act (General Powers and Functions)

The *Inland Fisheries Act 1995* is the principal legislation governing policy and management of the State's inland fisheries. The Act assigns the Director of Inland Fisheries with the following general powers and functions:

- To manage, control, protect, develop, improve, maintain and regulate salmon fisheries, fisheries in inland waters and freshwater fish;
- To stock inland waters with fish;
- To create, improve and maintain access to inland waters;
- To provide facilities in respect of access to inland waters;
- To carry out research and investigation into matters relating to salmon fisheries and fisheries in inland waters; and
- To collect, publish and disseminate information relating to freshwater fish and inland waters.

The Director may do anything necessary or convenient to perform any function under the Act. The Minister may give directions to the Director relating to the Director's functions and the Director is to comply with those directions.

4.0 Values

The Western Lakes fishery is wholly contained within the WHA, an area listed for its geological and biological significance in addition to its exceptional natural beauty and aboriginal cultural significance (PWS 1999). The Western Lakes area contains many examples of these values as well as providing a significant recreational resource for anglers. The following list sets out the primary aspects for which the area and the fishery are valued. Many of these values are listed as being an integral part of the World Heritage values as stated in the WHA plan, while others are specific to the Western Lakes fishery.

Environment

- A vast glaciated landscape that provides an extensive network of highland lakes, tarns and streams, providing a diversity of aquatic habitats.
- Water quality of a high standard (excepting natural processes).
- Undisturbed habitats for plants and animals that are rare, endangered and/or endemic, that represent a rich variety of evolutionary processes, as well as providing living evidence of Gondwana and Pangea elements.
- Natural scenery of a unique nature.

Conservation

- Supports a number of locally endemic aquatic species of high conservation status.
- Key examples of biological evolutionary processes.
- Significant representation of high altitude communities of flora and fauna both terrestrial and aquatic.
- Significant geomorphological features and processes.
- Wetlands of national importance and state significance, as listed in the directory of important wetlands (Lake Kay and Clarence Lagoon) (ANCA 1996).
- Aboriginal cultural sites.

Recreational/Tourism

- Increasingly popular bushwalking area.
- Recreational trout fishery that is a major destination for local, interstate and overseas anglers.
- In addition to other Central Plateau fisheries, supports a significant service industry including a growing guided fishing industry.
- 4WD vehicle use, primarily to access some remote fishing areas.

Other

- Provides an educational resource for the study of natural history and outdoor skills.
- Provides a significant resource for scientific research with examples of endemic species, evolutionary process and significant isolated undisturbed aquatic habitats.
- Hydro-electric power generation water storages at Lake Mackenzie and Lake Augusta.

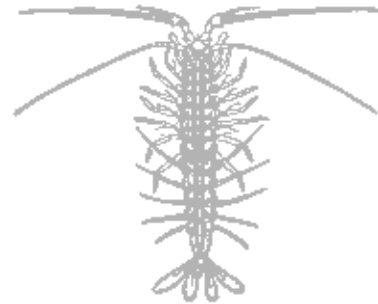
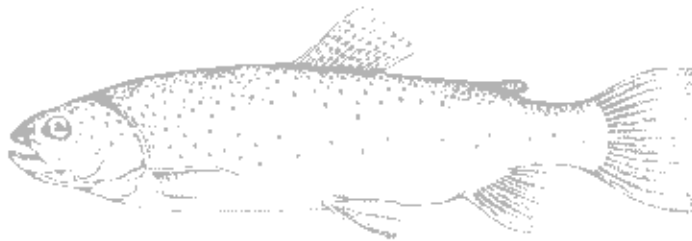
5.0 Vision and Overarching Goals

Vision Statement

The Western Lakes - a sustainable high quality wild fishery, providing a unique and diverse world-class angling experience within a wilderness environment.

Overarching Goals

- Preserve existing natural values for which the area is valued.
- Manage the fishery on an ecologically sustainable basis by adopting an ecosystem approach to management.
- Ensure management of the fishery is consistent with other conservation and natural resource management objectives.
- Maintain and enhance wild trout stocks and provide for a high quality angling experience.
- Adopt a strategic approach to the promotion of the fishery and communications with stakeholders.



6.0 Environment

6.1 Background

The Western Lakes area consists of a vast network of highland lakes and streams contained within a glaciated landscape. The waters of the area are characteristically clear and low in nutrients, with high water clarity a much valued aspect of the trout fishery. The area is a significant scientific resource with important alpine plant communities, numerous endemic species of flora and fauna and examples of distinctive geomorphological processes. The region also sustains a popular remote area trout fishery that is esteemed by anglers for the distinctive setting of the fishery. Collectively, these attributes make the fishery unique and are valued by anglers and other users.

If values are to be maintained, all users will have to take an active approach to minimise the impacts of their activities. This is particularly important in reference to water quality and localised degradation caused by increased usage and inappropriate practices.

One of the main difficulties in achieving suitable management outcomes, is how to balance the requirements of users against the need to minimise impacts on the distinctive values of the fishery and the WHA. The challenge is to adopt management strategies to address issues before they impact on the fishery and its surrounding environment and result in unacceptable restrictions on the use of the resource.

Water Quality

The high quality of water within the region is a much valued aspect of the Western Lakes. While at times some water quality parameters may exceed national drinking water guidelines (due to natural bacterial contamination from native animals), the general quality of the water and especially high water clarity is particularly important to the recreational trout fishery. The maintenance and protection of water quality is a high priority. Activities that have potential to impact directly on water quality include, an increased use of motorised boats, inappropriate use of boats, construction of informal weirs on lake outflows and excessive wading.

Wading

Intensive wading has been identified by anglers as an issue potentially affecting water quality. At present, this is primarily confined to Lake Botsford and Howes Lagoon Bay. On waters like Lake Kay, although angling pressure is relatively high, wading impacts are more dispersed.

Serious impacts from wading are not clearly evident and additional information will need to be collected to demonstrate impacts. Moreover, restrictions on wading are not recognised by the majority of anglers as being workable, or at present, desirable. A strong education campaign to inform anglers is seen as the most desirable method of limiting wading impacts.

Boating

Within the Western Lakes, regulations concerning the use of boats are generally angling related, with regulations centred on the use of motorised boats while fishing. Inland Fisheries regulations do not cover the general use of boats, although some boating restrictions are in place under the WHA plan. Marine and Safety Tasmania (MAST) boating regulations still apply to all boat users.

Relative to other fisheries, the use of boats within the Western Lakes is moderately low. However, with changing trends in fishing methods, such as loch style fly fishing and boat polaroiding, in conjunction with the traditional practice of trolling, an increased use of boats is likely. This is particularly so within the main waters of the Nineteen Lagoons. On more remote waters, boat usage is low, although there is anecdotal evidence to suggest this is also increasing.

The primary issues associated with increased boating are the impacts on water quality through hydrocarbon exhaust omissions, mechanical disturbance and wake induced erosion of lunettes. Additionally, the impacts associated with the launching and retrieving of boats in areas without ramps or pads and the damage done while accessing suitable launch sites will need consideration.

The impacts of speeding boats are minimal, although many anglers believe that boating impacts could be reduced and responsible boating promoted, if appropriate speed limits were implemented and adhered to.

Weirs

Several waters within the region have small rock or board weirs across their outflows to maintain higher water levels. Many of these weirs were constructed by anglers (some with past IFS endorsement) to sustain better fishing conditions. While they may temporarily achieve this, they do have the potential to alter the ecology to the long term detriment of the fishery and assist dispersal of introduced species (Bryant and Jackson 1999). Moreover, some weirs have been implicated in the erosion of lunettes due to increased lake levels. In the past, individual angling groups have made informal arrangements to re-instate dilapidated weirs. The IFS is often not consulted on these matters which have potential to impact on fishery performance and the enjoyment of other anglers and users of the region. There is a need to set clear guidelines on the construction, rehabilitation or removal of weirs to protect the natural environment and the values of the fishery.

Presently, under the *Water Management Act 1999*, section 146, dam works are required to be approved by the Assessment Committee for Dam Construction under part 8 of the Act. This applies to dams on water courses and all dams not on watercourses that hold back greater than one megalitre of water. Dam works are defined as any works for the construction, erection, enlargement, modification or removal of a dam/weir.

6.2 Responsibility

- Hydro Tasmania is responsible for managing water levels within lakes Augusta and Mackenzie according to operational requirements. Hydro Tasmania also holds the water licence for Hydro catchments within the Western Lakes.
- The PWS is responsible for land management within the WHA. This is achieved under the guidance of the WHA plan.
- Protection and maintenance of water quality within the WHA is the responsibility of DPIWE. Environmental quality objectives for waters within the WHA are set out in the WHA plan and include:
 - minimisation of human impact on environmental quality,
 - maintenance of water quality throughout the WHA within the range of local natural background levels, and
 - minimisation of human-caused health risks to visitors, native plants and animals.
- Administration and policy relating to dam/weir works is the responsibility of the Water Management Branch, DPIWE, under the *Water Management Act 1999*.
- MAST is the statutory authority that manages functions relating to recreational and commercial vessels within the State. It is responsible for regulation, registration and licensing of vessels and their operators and the management of boating facilities.
- IFS is responsible for the management, control and protection of fisheries in inland waters and freshwater fish.

6.3 Current Management

Water Quality

Water quality assessments have previously been conducted in lakes Ada, Augusta, Mackenzie, Explorer, Nameless and Naomi, and in Olive and Clarence lagoons as part of routine monitoring for Hydro Tasmania. This monitoring has recently been reviewed and only lakes Augusta and Mackenzie are presently surveyed. These studies show that in general, waters of the Western Lakes area are highly dilute, low in overall productivity and low in general turbidity. The main exception to this is the regular occurrence of elevated turbidities at Lake Explorer. Andrews *et al.* (2000) advise that management options for Lake Explorer are limited and generally undesirable given the natural status of the lake and its location in the WHA. The variable water clarity of Lake

Explorer exemplifies a natural limnological system which experiences intermittent high turbidity periods due to its shallow depth, morphometry, geology and geographical location.

Monitoring has also been undertaken by DPIWE within the Walls of Jerusalem National Park during 1995-96 and 2001. Reporting of these surveys is currently in press (Driessen, pers. comm.).

Other studies that have examined general limnological parameters in some Western Lakes waters are; Walsh (1991), Ling *et al.* (1989), Bowling *et al.* (1986) and Buckney and Tyler (1973).

Boating

Management of boating safety is the responsibility of MAST, while the general use of boats within the WHA is the responsibility of the PWS. Under the WHA plan, motorised boating is permitted within the CPCA on lakes Augusta, Ada and Mackenzie, Double Lagoon and lakes accessible from the Pillans-Julian vehicle track. Motorised boating is precluded on Lake Fergus, Clarence and Ada lagoons and all other Western Lakes waters (PWS 1999).

There are several specific regulations relating to the use of boats while fishing within the Western Lakes. These regulations are set by the IFS and are presented in the *Inland Fisheries (Recreational Fishing) Regulations 1999*.

Wading

The IFS has recently installed signage at several lakes within the Nineteen Lagoons. These signs inform anglers of specific regulations and provide information about individual waters and the need for anglers to restrict wading in sensitive areas. The IFS intends to closely monitor the impacts of wading and if necessary, implement regulations to limit future degradation.

6.4 Objective

Minimise environmental impacts on the fishery and world heritage values while maintaining fishing opportunities for freshwater recreational anglers.

6.5 Prescriptions

Water Quality - General

- Hydro Tasmania/IFS to review the current Hydro funded water quality monitoring program, with a view to including key waters within the Western Lakes for water quality monitoring.
- IFS to undertake monitoring for hydrocarbon residues in selected waters.

Weirs

- No new weirs to be constructed within the Western Lakes fishery.
- Within the Nineteen Lagoons, identify and assess existing weirs, and in consultation with the PWS, Nature Conservation Branch (NCB) of DPIWE and angling groups, and with the appropriate permit approval from the Assessment Committee for Dam Construction (DPIWE), maintain or remove existing weirs as appropriate.
- Any maintenance work on weirs or removal of a weir within the Western Lakes area must not proceed without the appropriate permit approval from the Assessment Committee for Dam Construction (DPIWE) and without IFS consultation.
- Inform and educate anglers regarding the possible impacts associated with the construction of informal weirs.

Wading

- Install signage to inform anglers of the potential impacts they may have on the ecology of the fishery and request anglers to limit wading in sensitive waters/areas. Sensitive waters identified are Lake Botsford and Howes Lagoon Bay.
- Encourage and support studies examining the impacts of intensive wading on lake ecology.
- Assess impacts and implement regulatory changes as necessary to protect fishery values.

Boating

- Review general boating regulations with particular reference to speed limits. Where appropriate approach MAST regarding the implementation of alternative regulations.
- Continue to support MAST with boating compliance patrols.
- Recommend that a boating code of practice be established by the PWS, MAST and IFS with input from user groups.
- Liaise with the PWS and NCB to ensure the implementation of the prescriptions relating to boating as stated within the WHA plan.
- Encourage anglers to use boats for fishing at alternative locations outside of the Western Lakes by offering additional access for boating.
- Monitor boat usage on Lake Ada and Double Lagoon via road surveys and formal reporting by Fisheries Officers.
- Increase public awareness of the potential impacts of motorised boating.

7.0 Invertebrate Fauna

7.1 Background

In general, little is known of the freshwater invertebrate fauna of the Western Lakes region. Published information is sparse and what is available is primarily related to generic surveys of the fauna rather than individual species. Moreover, there are certainly many species that remain undescribed. The fact that no freshwater invertebrate species within the region are listed under threatened species legislation (Bryant and Jackson 1999) is primarily due to low collection effort and insufficient taxonomic knowledge of the general aquatic fauna.

While the IFS's role is primarily management orientated, some baseline research is essential to provide information to determine appropriate management actions. Funding permitting, the IFS and the NCB, can fulfill this role and support research projects that focus on the basic elements of identification and distribution of aquatic invertebrate species.

Invertebrate Fauna - Significant Elements

The Western Lakes possesses a diverse aquatic invertebrate fauna with many unique and endemic elements. Typical of the fauna are the mayflies, stoneflies, caddis, dragonflies and damselfly as well as a vast array of midges, aquatic beetles, crustaceans and molluscs.

Those elements of the invertebrate fauna that deserve particular attention are the two species of mountain shrimp (*Anaspides*) and the burrowing crayfish (*Parastacoides*).

Mountain Shrimp - Anaspides

Prior to its discovery in Tasmania, the only syncarid crustaceans known were from fossils found in Europe and North America dating approximately 270 million years ago. The Tasmanian mountain shrimp fauna is significant in that it is endemic, has a strong fossil record and exhibits many aspects of the generalised primitive crustacean morphology.

Two species are found within Tasmania, *Anaspides tasmaniae* and *Anaspides spinulae*, with both occurring in the Western Lakes area. There is however, some evidence that indicates the two species on the Central Plateau may in fact be a single species with varied morphological forms (Andrew 1999).

Additionally, Sloane and French (1991) suggest that the distribution of *Anaspides* within the Western Lakes is in part determined by predation by galaxiids, with both *Anaspides* and galaxiids being almost mutually exclusive in stream environments. They also suggest that the two species of *Anaspides* may be differential forms of lake and stream populations, which adds weight to the single species hypothesis.

If effective conservation of the *Anaspides* fauna is to be achieved, then questions relating to its taxonomic status and distribution need to be investigated further.

Burrowing Crayfish - Parastacoides

The burrowing crayfish *Parastacoides* is known to occur in several locations within the Western Lakes. At present, the genus is under taxonomic review and is likely to be separated into fourteen species based on genetic and morphological differentiation (B. Hansen pers. comm.). At least one of the fourteen possible species will be located within the Western Lakes region. Studies that focus on this species should be encouraged and supported by the IFS and information collected incorporated into management of the species. A clearer understanding of the taxonomy and distribution of the group should assist in future conservation.

7.2 Responsibility

- IFS has responsibility for policy, management and planning for all freshwater fish species as defined under the *Inland Fisheries Act 1995*.
- Policy relating to the management of listed threatened species is the responsibility of the Threatened Species Unit, DPIWE, under the *Threatened Species Protection Act 1995*.

7.3 Current Management

There are no current actions in place regarding management of freshwater invertebrate species within the Western Lakes region. Distribution and taxonomic information of the invertebrate fauna stems primarily from Inland Fisheries Commission Occasional Reports (1987, 1988 and 1989), Richardson and Swain (1989) and Andrew (1999).

In addition to the above documents, an extensive survey of the littoral invertebrate fauna was conducted in conjunction with native fish surveys during 1988. To date, apart from some information from the Traveller Range, this collection has yet to be examined and reported.

7.4 Objective

Ensure that appropriate mechanisms are put in place to identify and protect the aquatic invertebrate fauna of the Western Lakes fishery.

7.5 Prescriptions

- Access funding specifically for the study of key freshwater invertebrate communities or species, and actively encourage and support projects that focus on the identification and distribution of invertebrate species or communities within the Western Lakes.
- Encourage and support projects that focus on the taxonomy and distribution of *Anaspides*, with particular emphasis on the role that predation by galaxiids and trout have in determining distribution.
- Encourage and support the identification, collation and reporting of existing collections of invertebrate fauna from the Western Lakes region.
- Establish a register of high conservation value waters and where appropriate, establish fauna reserves and develop measures to protect these waters.
- Encourage and support research programs that examine the impact of trout on native aquatic fauna.

8.0 Native Fish Management

8.0 Background

The Tasmanian galaxiid fauna is a significant part of the Australian freshwater fish fauna. In total, the family (Galaxiidae) includes about 50 species within its known distribution of Australia, New Zealand, Patagonian South America, South Africa and New Caledonia (McDowall 1996). In the order of 20 species occur within Australia of which 15 are found in Tasmania (Fulton 1990). Ten of these species occur only in Tasmania, with several species isolated to one or two lakes or a single system. Overall, the Tasmanian galaxiid fauna is historically and ecologically highly significant. They have strong ancestral linkages with the Gondwana fauna and local speciation is common and widespread within Tasmania. The protection and conservation of the Tasmanian galaxiid fauna is a high priority given its evolutionary links, high endemism, ecological importance and number of threatened species.

Within the Western Lakes, four species of galaxias occur, the climbing galaxias (*Galaxias brevipinnis*), spotted galaxias (*Galaxias truttaceus*), western paragalaxias (*Paragalaxias julianus*) and Clarence galaxias (*Galaxias johnstoni*).

Climbing and Spotted Galaxias

Both the climbing and spotted galaxias are widespread and often locally abundant, inhabiting both riverine and lake environments. Several lakes, especially within the Nineteen Lagoons region, have large populations of both species, although the spotted galaxias tend to be most abundant in Carter Lakes, Double Lagoon and First Lagoon. The climbing galaxias is generally most abundant in headwater lakes and tarns and associated streams of the Greater Western Lakes.

Both species co-exist with brown trout, although the impact brown trout have had on their populations within the area is not known. Generally, both species appear more abundant in waters that are trout free or have less abundant trout populations.

Clarence Galaxias

The Clarence galaxias was first described in 1936 from specimens collected from a tributary of the lower Clarence River (Scott 1936). Subsequent surveys now show it to be absent from this area. It is presently found only in trout free waters in parts of the Clarence, Nive and upper Derwent catchments. The exception is Clarence Lagoon, which also contains brook trout. This restricted and fragmented distribution is due to direct competition and predation by brown trout. Because of its restricted distribution and the on-going threat that trout pose, the species has been listed as endangered under State and Commonwealth legislation.

Western Paragalaxias

The western paragalaxias (*Paragalaxias julianus*), was described in 1978 (McDowall and Fulton 1978). It exists only within the Western Lakes and takes its name from the primary location from which it was first found (Julian Lakes). Its distribution is restricted to the lakes within the upper reaches of the Little Pine and Ouse rivers, and within the Nineteen Lagoons in lakes Augusta, Ada, and Dudley, Howes Lagoon Bay, and Carter Lakes although additional localities are possible (Fulton 1988). The species has not been recorded from the James River system and does not occur in the lower sections of the Little Pine River. Its apparent absence from the James River system is most likely due to a lack of collection effort. The western paragalaxias is often locally abundant and co-exists with the spotted and climbing galaxias as well as brown trout. Little is known of the life history of the species and the impact that brown trout have had on existing populations and the role, if any, the climbing and spotted galaxias have on determining its distribution. Furthermore, the overall distribution of the species is yet to be determined conclusively.

The western paragalaxias is listed as rare under the *Tasmanian Threatened Species Protection Act 1995*. The primary reasons for its listing are its restricted distribution and the potential threat posed by brown trout competition and predation.

Threats to Native Fish

The greatest threat to the native fish populations within the Western Lakes is from introduced species. The main avenues of introduction are from illegal stockings and bait fishing. The negligent stocking of trout into areas that contain vulnerable native species can seriously threaten their continued existence. Moreover, the risk of wide spread unrestricted bait fishing is no longer acceptable given the potential consequences if a pest fish species were to become established. These issues will be addressed in an affirmative manner in order to protect the native fish species of the area. (refer section on *Pest Species Management 10.0*, for expansion of these topics and prescriptions for pest species management).

8.2 Responsibility

IFS has responsibility for policy, planning and management for all native freshwater fish species as defined under the *Inland Fisheries Act 1995*.

Policy relating to the management of listed threatened species is the responsibility of the Threatened Species Unit, DPIWE, under the *Threatened Species Protection Act 1995*.

Implementation of the Recovery Plan for Threatened galaxiids is the responsibility of the IFS under the guidance of the Galaxiid Recovery Team. The team was established to review and advise on the management of the five species included in the Recovery Plan.

8.3 Current Management

Studies of the spotted galaxias within the Western Lakes are confined to Humphries (1987) who examined the life history of this species in Isabella Lagoon and Carter Lakes.

Some distribution data relating to the spotted and climbing galaxias and the western paragalaxias have been collected during WHA fauna surveys (Fulton 1988), and by Sloane and French (1991) during field surveys for a previous draft fishery management plan.

Presently, no work is being carried out by the IFS on the climbing and spotted galaxias, or the western paragalaxias. Hydro Tasmania, as part of their Environmental Review of the South Esk - Great Lake Hydro catchment, have completed some minor technical studies of Lake Augusta and found significant numbers of the spotted and climbing galaxia and the western paragalaxias.

Some limited life history information for the western paragalaxias has been reported by Fulton (1982).

Management for the Clarence galaxias is according to the prescriptions of the Recovery Plan for the Pedder, Swan, Clarence, swamp and saddled galaxias (Crook and Sanger 1997). This recovery plan is currently being reviewed.

At present, all of the prescriptions of the Recovery Plan relating to the Clarence galaxias are being implemented under the guidance of the Galaxiid Recovery Team. These prescriptions include:

- regular monitoring of existing populations,
- surveys of adjacent areas to determine if undocumented populations exist,
- establishment of translocated populations if suitable sites can be found,
- installation of artificial barriers and maintenance of existing natural barriers,
- surveys to determine the extent of trout invasion,
- trialing methods of captive breeding,
- maintenance of the existing brook trout stocking policy for Clarence Lagoon, and
- a public awareness and education program.

The life history of Clarence galaxias has been examined by Fulton and Sanger (1991). Surveys of existing populations and possible new locations are continuing. Critical habitat areas for adults have been identified, although little is known of the requirements for spawning and larval development.

An illegal introduction of rainbow trout into Johnsons Lagoon has recently been discovered. The IFS is taking measures to eradicate these trout and prevent further illegal stockings in order to protect one of the few existing populations of the Clarence galaxias.

8.4 Objective

Protect, conserve and manage all native fish species within the Western Lakes to a level that ensures their long term survival.

8.5 Prescriptions

General Prescriptions

- Encourage the examination of trout stocking and trout population levels on key galaxiid populations.
- IFS to develop trout stocking policies that ensure the long term sustainability of native fish populations within the Western Lakes. Policy is to include the following:
 - all waters within the Western Lakes that are trout free, or have previously been trout free but have recently been illegally stocked, will not receive any trout stocking by the IFS,
 - stocking rates are to be maintained at levels that do not impact on the long term conservation of native fish species, and
 - where necessary, de-stock specific waters considered critical for the sustainability of native fish species within the Western Lakes.
- Implement actions to prevent and detect illegal stocking of trout and undertake actions to minimise the risk of accidental or intentional release of pest species (*refer section on Pest Species Management 10.0*).
- Continue to support the public information and education campaign for threatened species. Expand the campaign to include all native fish species within the Western Lakes. This can be achieved by:
 - producing information leaflets and fact sheets for circulation to the general public and posting on the IFS web-site,
 - establishment of a native fish display with educational information at the Salmon Ponds,
 - installing signage at key waters with information relating to native fish management and conservation,
 - in conjunction with the PWS and NCB, establish an information shelter at an appropriate site/s displaying material on native species,
 - inform and educate IFS Fisheries Officers and FishCare volunteers regarding the management and conservation of native fish, and
 - monitor public awareness of native fish issues during routine creel surveys.
- IFS to establish a register of high conservation value waters and where appropriate, establish fauna reserves and develop measures to protect these waters.

Clarence Galaxias

- Fulfill the requirements of the Recovery Plan for the Clarence galaxias, so that it no longer meets the International Union for the Conservation of Nature criteria of endangered, and can be downlisted to vulnerable. To achieve this goal the following prescriptions contained within the Recovery Plan are to be undertaken:
 - regular monitoring of existing populations,
 - surveys of adjacent areas to determine if undocumented populations exist,

- establishment of translocated populations if suitable sites can be found,
 - installation of artificial barriers and maintenance of existing natural barriers,
 - surveys to determine the extent of trout invasion,
 - trialing methods of captive breeding,
 - maintenance of the existing brook trout stocking policy for Clarence Lagoon, and
 - a public awareness and education program.
- Identify critical spawning habitat as well as habitat requirements for juvenile stages.
 - Establish a monitoring and removal program to eradicate trout from Johnsons Lagoon.

Western Paragalaxias

- Establish a program to study the life history of the western paragalaxias, identifying habitat requirements for both adult and juvenile stages.
- Undertake surveys to determine the distribution of the western paragalaxias within the Western Lakes, with particular emphasis on the James River system, the downstream extent in the Ouse and Little Pine rivers, and populations within the Nineteen Lagoons.
- Identify key waters for surveying of population status. Manage and monitor as required.

9.0 Recreational Fisheries Management

9.1 Background

Overview of History

With the first hatching of brown trout at the Salmons Ponds hatchery in 1864, establishment of the brown trout fishery was bound for success. Initial stockings focused on rivers, with a number of releases occurring in the Derwent and Ouse rivers systems. Brown trout quickly became established throughout the associated waterways. The first confirmed record of brown trout being established in the Nineteen Lagoons region of the Western Lakes was in 1893 (Fisheries Dept. 1893). The first stocking of the Chudleigh Lakes area is thought to have taken place in 1895 and it was this area that initially attracted the attention of most Western Lakes anglers. The Nineteen Lagoons fishery received little attention from anglers primarily due to a lack of access and the superior quality of trout fishing in Great Lake.

With the construction of Liawenee Canal to divert the waters of the Ouse River into Great Lake, and the subsequent creation of a dam on the upper Ouse River (Lake Augusta Dam) in 1950, anglers had ready access to the Nineteen Lagoons and adjacent waters. While some anglers took advantage of this chance, most opted to fish one of the many newly created hydro impoundments and lagoons elsewhere on the Central Plateau. Initially many of these fisheries produced high quality fish, but as time proceeded, fish populations stabilised and anglers' attention began to focus on alternate destinations such as the Western Lakes. By the late 1970's, the number of anglers visiting the Western Lakes began to rise significantly. The promotion of the area as an iconic fishery and ease of access, resulted in a marked increase in fishing pressure, and to some extent a loss of the 'wilderness fishing experience'. Actions to overcome many of the issues associated with increased usage were recommended by Sloane and French (1991) in an earlier draft trout fishery management plan for the area. However, despite the plan containing many useful strategies it was never adopted by the Commission of the day. Today the Nineteen Lagoons is largely a day use fishery with anglers basing themselves at Great Lake, Arthurs Lake and the Bronte area, or travelling from the main population centres.

As a result of these changing trends, several fishery and land management issues have emerged which require prudent management to maintain and preserve the Western Lakes for the long term future. The implementation of appropriate management strategies will have benefits for both local anglers and the tourism market.

Management Issues

At the core of management is the high priority need to preserve the values that make the Western Lakes recreational trout fishery unique. In general, these values can be summarised as:

- preservation of wilderness values,
- preservation of high water clarity and general water quality,
- maintenance of the wild brown trout population, preferably by natural recruitment,
- absence of other introduced fish species, and
- ability to easily access the vast majority of the fishery by either vehicle or walking.

Given the increase in visitation to the Western Lakes over the past ten years, maintenance of sustainable catch rates, fish quality and overall angling experience are of primary importance. Natural recruitment of wild stocks is the mainstay of the fishery and preservation of this status should not be compromised by the need to excessively stock waters or use fertile domestic stocks. The best results can be achieved by adopting meaningful size limits and bag limits, in conjunction with a prudent stocking strategy. The strategic use of sterile triploid trout, in combination with supplementary stocking of wild strains, will assist in meeting the objective for managing the recreational fishery. This strategy was successfully applied in the mid 1980's and resulted in marked shifts in angling effort to under-utilised waters. The provision of alternative angling opportunities within the Nineteen Lagoons will aid in conserving fish stocks at more highly valued waters and assist in decreasing fishing effort at popular waters.

Additionally, the application of the traditional minimum size limit for trout of 220 mm is considered irrelevant for managing most lake trout populations in the region. This limit does little to protect young healthy spawning fish or allow fish to on-grow to a reasonable size. A more meaningful minimum size limit of 420 mm, as in place for some waters within the Nineteen Lagoons, would adequately address this situation. In self-sustaining trout populations, a 420 mm minimum size limit would allow brown trout to spawn one to two times before they reach catchable size. Moreover, the growth rate of brown trout in the lower productive waters of the area slows significantly around 440 - 460 mm size range. Consequently, a 420 mm minimum size limit would protect fish during their maximum growth period. A 420 mm minimum size limit also offers a higher level of sustainability for those fisheries that receive transfers of adult brown trout.

In addition to meaningful size limits, increased education and effective enforcement of Inland Fisheries regulations are two elements that can assist in sustainable management of the recreational fishery.

Important areas identified for specific attention are:

- community awareness of fishery regulations, fishery management goals and strategies,
- ensuring anglers are licensed,
- ensuring compliance with fishing regulations, and
- improving community awareness and education about the risks of illegal introductions.

These issues will be dealt with in an annual compliance service paper developed by the IFS. This paper will identify issues and define priorities for overall compliance programs. The aim of this approach is to ensure that compliance effort is closely aligned to fishery management goals and objectives.

The use of FishCare volunteers and angling clubs in raising public awareness and promoting fishery management issues will support the educational role of Fisheries Officers. Their role in performing this function should be included in a broader communication and education program for the whole of the State's fishery.

With the move from a broadly regulated fishery to water specific management, an effective education and targeted enforcement program, in conjunction with strategic stocking, meaningful size and bag limits and appropriate angling seasons, will ensure the objective for management of the recreational fishery is achieved.

9.2 Responsibility

- IFS is responsible for the general management of salmon fisheries, fisheries in inland waters and freshwater fish. The primary tools in achieving this are, the dissemination of information and education, stocking, regulations, research and enhancement of the fishery.

9.3 Current Management

Stocking

Management of the Western Lakes recreational trout fishery is primarily confined to the stocking of specific waters within the Nineteen Lagoons. This involves the transfer of adult brown trout from the spawning run at Liawenee Canal to waters within the Nineteen Lagoons, and (since 1999) stocking of selected remote waters within the area using wild brown and rainbow trout fry. Presently, there is no formal stocking strategy that recognises the intrinsic values of individual waters, or the expectation of anglers. Furthermore, until recently there has been minimal quality control or selection of younger productive fish in the adult transfer program, or assessment of the success of specific water stockings.

If fishery management objectives are to be achieved, then development of a strategic stocking program that recognises individual water values and the expectation of anglers will need to be developed. This program is to establish prescriptive rules to select suitable adult fish for transfer and set guidelines for the stocking of waters to meet the objectives for management.

Measuring Catch and Effort

Information on catch rates, angling effort and harvest are collected via an annual postal questionnaire that surveys approximately 10 per cent of all anglers. This information, along with stocking records, are the primary method of fishery assessment. The only validation of the questionnaire data was from an extensive roadside survey carried out in 1991 that targeted anglers exiting the Western Lakes via the Lake Augusta road. If postal questionnaire information is to be used for future management purposes, then validation by the repeat of the 1991 Western Lakes road survey and collection of fishery performance information will be necessary.

Bag Limits and Size Limits

Until recently, the fishery has been managed under the one minimum size limit of 220 mm and a single all-inclusive bag limit of five fish per day for all Western Lakes waters collectively. During 2000, some changes were made to this system with the introduction of a 420 mm minimum size limit and varied bag limits for several waters within the Nineteen Lagoons. This included the establishment of a single catch and release fishery (East Rocky Lagoon) and the change of the Carter Lakes fishery from fly fishing only to artificial lure. Changes primarily focused on waters that received adult fish transferred from Liawenee and on the maintenance of sustainable catch rates and quality of fish. Furthermore, the average harvest of trout from these lakes was significantly higher than the annual stocking rate, and the minimum size of fish stocked was generally 100 mm above the minimum legal size limit of 220 mm. The existing regulations were therefore totally irrelevant to the fishery. The new minimum size limit of 420 mm allows initially, for approximately 45 per cent of the adult fish stocked to be taken by anglers while the remaining 55 percent are protected to on-grow. It is hoped that future assessment of fish stocks in the Nineteen Lagoons can provide information for determining appropriate bag limits and size limits and to design stocking programs to meet the expectations of Western Lakes anglers.

Angling Season

The angling season for all Western Lakes waters is August - April inclusive. This excludes the spawning period for brown trout. The Upper Mersey Lakes Rainbow Fishery, despite being a valuable self sustaining wild rainbow trout fishery also opens and closes in-line with the brown trout season.

Compliance and Education

At present, compliance activities are limited, with special compliance activities carried out on an as needs basis to target specific issues such as illegal stocking. The effort and resources needed to efficiently perform successful compliance activities within the area are significant, consequently other fishery management issues often take priority. If management of the Western Lakes is to achieve the stated objective, then effective compliance and education will play an important support role in managing the fishery.

9.4 Objective

To maintain and preserve for the long term future, a sustainable, high quality wilderness trout fishery, offering a unique and diverse angling experience.

9.5 Prescriptions

Recreational Fishery Management - Nineteen Lagoons

The following fishery management strategy is to be adopted for the Nineteen Lagoons Fishery. Waters are grouped into six broad classifications based on natural attributes, fishery management objectives and the identified needs of stakeholders (*refer appendix 15.2 & 15.3 for specific water details*).

Stocking, Bag Limits and Size Limits

CLASS 1 WATERS: Self sustaining fisheries offering higher than average catch rates.

- No stocking.
- Bag limit of five fish per day from any individual water with a minimum size limit of 220 mm.

CLASS 2 WATERS: Self sustaining fisheries offering average catch rates.

- No stocking.
- Bag limit of two fish per day from any individual water and a minimum size limit of 420 mm.

CLASS 3 WATERS: Supplemented rainbow trout fisheries offering average catch rates.

- Low to moderate stocking rate, depending on management objective for specific water.
- Bag limit of two fish per day from any individual water and a minimum size limit of 420 mm.

CLASS 4 WATERS: Marginal value fisheries suitable to on-grow trout given favourable conditions.

- Low to moderate stocking rates using adult fish and/or fry.
- Bag limit of two fish per day from any individual water and a minimum size limit of 420 mm.

CLASS 5 WATERS: Limited recruitment but offering higher catch rates than designated trophy waters.

- Moderate stocking rate.
- Bag limit of two fish per day from any individual water and a minimum size limit of 420 mm.

CLASS 6 WATERS: Valued for their potential to on-grow fish to trophy size.

- No stocking, or to be stocked at low rates depending on fishery objectives and annual harvest.
 - Bag limit of one fish per day from any individual water (except East Rocky Lagoon) and a minimum size limit of 500 mm.
 - East Rocky Lagoon to be designated a catch and release fishery.
-

- An all-inclusive daily bag limit of five fish will apply to the Nineteen Lagoons area. This limit will consist of fish taken from individual waters within the Nineteen Lagoons Fishery that have their own individual daily bag limits.
- Triploid rainbow trout to be used only in the Nineteen Lagoons in order to meet management objectives and assist in dispersing angler effort.
- Adult fish transfers will consist of younger fish of approximately 420 mm, with poor conditioned fish discarded. When necessary, female fish are to be stripped of eggs before being transferred.

Angling Methods

- The following waters are reserved for fly fishing only; Howes Lagoon Bay, Rocky Lagoon, Second Lagoon, East Rocky Lagoon and Lake Kay and adjacent lagoons.
 - Bait fishing with a single hand-held rod with specified non-aquatic baits, will be permitted (within the Nineteen Lagoons) in Lake Augusta only.
 - All remaining waters within the Nineteen Lagoons Fishery other than those mentioned above, will be designated artificial lure only.
-

Fishery Performance Assessment

- The harvest of adult transfers in Lake Botsford and Carter Lakes is to be assessed and cross checked using the annual postal survey.
- Assessment of the comparative growth rates of diploid and triploid rainbow trout in Little Blue Lagoon is to be undertaken to determine the success of triploid stockings. Regulations for this water may be altered to support this research.
- Each year a representative sample of adult brown trout used for stocking waters of the Nineteen Lagoons is to be weighed and measured. This data, in conjunction with other fishery performance information, is to be used to determine appropriate stocking rates and where necessary, bag limits and size limits for those waters stocked with adult fish.
- The current adult brown trout stocking program is to be reviewed and evaluated, comparing the use of juvenile fish with adult fish transferred from Great Lake.
- An annual review of waters covered by the annual postal survey is to be completed and used in conjunction with fishery performance assessment information, to determine future fishery management actions.
- A roadside angler survey (as conducted in 1991) is to be undertaken during the period of this plan. This survey will measure harvest, catch and effort as well as obtain general information on boat use, vehicle access and angler satisfaction.

Recreational Fishery Management - Greater Western Lakes

The following management strategy is to be adopted for waters within the Greater Western Lakes Fishery.

Stocking

- Maintained as a wild brown trout fishery, with no or very limited stocking as determined by the IFS (except Clarence Lagoon, which is to remain a dedicated brook trout fishery).
- Generally, stocking will only occur in circumstances where consistent significant declines in trout populations are evident. The general angling value of the water, as well as its conservation values, must be given prime consideration in determining suitable stocking rates.
- Clarence Lagoon is to remain a dedicated brook trout fishery and will be regularly stocked with brook trout. Appropriate stocking rates are to be adopted to meet the conservation requirements for the endangered Clarence galaxias.

Bag Limits, Size Limits and Angling Method

- An all-inclusive daily bag limit of five fish, consisting of no more than two fish over 500 mm will apply for all areas within the Greater Western Lakes. This will allow anglers to take five fish from waters that have a high number of smaller fish, while minimising the take of larger fish from waters with limited recruitment.
- Bait fishing with a single hand-held rod with specified non-aquatic baits, will be permitted (within the Greater Western Lakes) in Lake Mackenzie only.
- All remaining waters within the Greater Western Lakes will be designated artificial lure only.

Recreational Fishery Management - Upper Mersey Lakes Rainbow Fishery

The following management strategy is to be adopted for waters within Upper Mersey Lakes Rainbow Fishery.

Stocking

- Stocking is to be carried out on an as needs basis, with the use of appropriate bag and size limits being the primary method of stock management. The general angling value of the water, as well as its conservation values, must be given prime consideration in determining suitable stocking rates.
- Only wild strains of rainbow trout are to be used for stocking.

Bag Limits, Size Limits and Angling Method

- An all-inclusive daily bag limit of five fish, consisting of no more than two fish over 500 mm will apply for all areas within the Upper Mersey Lakes Rainbow Fishery. This will allow anglers to take five fish from waters that have a high number of smaller fish, while minimising the take of larger fish from waters with limited recruitment.
- All waters within the Upper Mersey Lakes Rainbow Fishery will be designated artificial lure only.

General Prescriptions

Angling Season

- Angling season for the Nineteen Lagoons and Greater Western Lakes to remain in-line with the traditional brown trout season (August - April inclusive).
- Angling season for the Upper Mersey Lakes Rainbow Fishery to be brought in-line with the traditional rainbow trout season (October - May inclusive).

Stocking - General

- All waters within the Western Lakes that are trout free, or have previously been trout free but have recently been illegally stocked, will not receive any trout stocking by the IFS.
- All waters that have not previously been stocked by the IFS and are not trout free, may at the discretion of the IFS, receive supplementary stocking. Any such stockings to be carried out in a manner which recognises specific values i.e. conservation of endangered species or protection of highly valued trout waters.
- Fish stocks sourced from commercial fish farms or rearing units are not to be used for stocking within the Western Lakes (with the exception of brook trout and sterile strains of triploid rainbow trout). Any juvenile or adult stocks of brook trout or triploids from commercial fish farms, are to be subject to stringent screening and be cleared by IFS as being free of any other fish species. Guidelines for ensuring compliance with this requirement are to be developed before the release of any trout stocks from commercial operations.
- All stocks of diploid brown or rainbow trout are to be sourced from the wild where no contamination with domestic fish is possible.
- All stocking is to be assessed as part of the wider fishery performance assessment program.

Use of Boats for Fishing - All Areas

- Fishing from a boat while under-power (motorised boat) is permitted in lakes Augusta (including Augusta dam), Mackenzie, Ada, Pillans and Julian and Double Lagoon.
- Fishing from a motorised boat is not permitted on Ada Lagoon, Clarence Lagoon, Lake Fergus and all other waters of the Western Lakes fishery except those above designated as motorised boating waters. NB-This prescription only applies to fishing from a motorised boat while under power and does not prohibit the general use of a motor when not fishing. The PWS is responsible for controlling the general use of motorised boats within the WHA as noted in the WHA plan (p. 138).
- Fishing from a boat is not permitted in Carter Lakes and its associated lagoons, Howes Lagoon Bay, Lake Botsford, Rocky Lagoon, Lake Dudley and East Rocky Lagoon.
- The regulation that bans fishing from a boat in the channel connecting Ada Lagoon and Lake Ada will be revoked.

Compliance and Education

- Compliance requirements for managing the Western Lakes fishery will be determined by development of an annual compliance strategy and an associated operational plan. Key components of this process will be:
 - community awareness of fishery regulations, fishery management goals and strategies,

- ensuring anglers are licensed,
- ensuring compliance with no bait fishing regulations, and
- improving community awareness and education about the risks of illegal introductions of fish.
- Compliance activities will focus on high priority issues, waters and times.
 - Priority issues: Illegal stocking, bait fishing, netting and licence checking (Nineteen Lagoons).
 - Priority waters: Stocked and trophy waters within the Nineteen Lagoons, Pillans and Julians area and Blue Peaks region.
 - Priority times: Long weekends, holiday periods and acting on relevant information received.
- A specific compliance effort will be allocated to the detection of illegal hatcheries and apprehension of offenders. This is a high priority issue.
- The use of FishCare volunteers and angling clubs in an educator role will be encouraged. Specific topics for consideration are:
 - community awareness of fishery regulations, fishery management strategies and
 - improving community awareness and education about the risks of illegal introductions.
- Provide Fisheries Officers and FishCare volunteers with relevant information and handouts regarding new regulations, management strategies and illegal introductions.
- Joint compliance patrols with authorised PWS officers or other relevant bodies will be included in operational planning.
- Where appropriate, aerial patrols will be considered as a method of detection and intelligence gathering, especially regarding priority issues.

10.0 Pest Species Management

10.1 Background

The introduction and subsequent translocation of trout, redfin perch, tench and European carp have had major implications for management of the Tasmanian freshwater fishery, both in terms of conservation of native fish and the recreational trout fishery. Managing pest species often requires large investments of money and resources, loss of recreational usage, and displacement of both native and desirable introduced species. The establishment of a pest species such as redfin perch within the Western Lakes would have major consequences for fisheries management and potentially destroy the reputation of the area as a world class trout fishery. Moreover, the Western Lakes host a number of endemic fish and aquatic invertebrate species as well as expansive wetlands, some of which are recognised as being nationally important. All these elements would be at risk if pest species were allowed to become established.

If pest species management is to be successful and the unique values of the Western Lakes protected, then the following issues will need to be considered and appropriate management actions implemented.

Impacts of Trout

While providing a valuable recreational resource, trout can have major impacts on native fish if they intrude on the distribution of vulnerable species. Since their introduction in 1864, brown trout have had a significant impact on several species of galaxias (native fish species) and no doubt, many unknown impacts on invertebrate species. Currently, twelve species of freshwater fish are listed under Tasmanian threatened species legislation. Several of these are listed due to the threat of predation and competition by trout.

Within the Western Lakes, brown trout have had a major impact on the Clarence galaxias. Due to overwhelming predation and competition by brown trout, the Clarence galaxias is excluded from many areas of suitable habitat and is under serious threat of extinction.

If the recreational trout fishery is to continue at its present level, then sustainable management of the resource is needed. The prudent management of trout stocks is an important element in pest species management and will be incorporated into fisheries planning and policy.

Natural Dispersal

Natural dispersal of pest species within the State's river and lake systems is an ever present threat to native species conservation and the recreational trout fishery. At present, several in-stream barriers downstream of the Western Lakes provide limited protection against the intrusion of pest fish. Should any of these barriers fail, dispersal of pest fish species would have major consequences for both native fish stocks and the trout fishery. Moreover, several streams that drain the Western Lakes area have no barriers and if an undesirable species were to become established, then upstream dispersal within the Western Lakes would occur. If the fishery is to be fully protected, established barriers will need to be identified and appropriate management actions implemented to ensure their effectiveness.

Trout Stocking

The IFS is solely responsible for the stocking of trout in the Western Lakes. This includes the use of adult brown trout and brown trout fry, as well as rainbow and brook trout. While the IFS has a number of protocols in place to minimise the risk of cross-contamination of stocks with pest species, establishment of a formal policy and operational guidelines will ensure a no-risk level of transfer. These will include the induction and education of staff, and adoption of formal translocation procedures to reduce the risk of introduction.

Bait Fishing

The introduction of European carp and the continued spread of redfin perch have in-part been linked with the practice of bait fishing. The use of fish for bait outside of estuarine waters continues to be an on-going concern despite their use being banned. The use of invertebrate species for bait is also of concern, with imported species of mainland dragonfly larvae (mudeyes) being used as bait. The risk of allowing widespread unrestricted bait fishing is unacceptably high, given the impacts that species such as redfin perch, European carp and eastern gambusia would have if they were to become established within the Western Lakes or adjacent systems.

Illegal Introductions

One of the main threats to native species conservation and sustainability of the trout fishery, comes from the illegal stocking of trout. Within the Western Lakes a number of trout free waters have been illegally stocked. The origins of these stockings are believed to be from three primary sources, illegal hatcheries, approved rearing units and trout designated for approved farm dam stockings. To prevent illegal introductions, appropriate procedures and protocols will be developed and implemented, including a high level of accountability for those persons gaining access to fish stocks. This will aid in ensuring that transfers are carried out in strict accordance with permit conditions. Moreover, the Inland Fisheries Act and Regulations will be reviewed regarding the appropriateness of existing regulations relating to the illegal possession of fish, and the intent to stock waters illegally. Penalties for breaches of these regulations will need to reflect the seriousness of offences.

Wetlands

The Western Lakes region contains numerous examples of wetland types. Of particular importance are the wetlands of Clarence Lagoon and Lake Kay, which are listed as having both national importance and state significance. The protection of wetlands is vital to the health of the fishery and appropriate actions to prevent the introduction and invasion by pest species is very important. Education of recreational users, with an emphasis on increased awareness and good housekeeping practices is the key to appropriate management of this issue.

Illegal Imports of Fish

Illegal imports of fish have significance not only for the Western Lakes, but also for the State's fishery as a whole. The importation of diseased salmon products and introduction of pest species have potential to cause massive damage to the fishery and have major ramifications for fisheries management (IFS 1999). Close communication between the IFS and the Australian Quarantine Inspection Service (AQIS) and education of the public regarding the devastating impacts of illegal imports, are a high priority.

10.2 Responsibility

- IFS is primarily responsible for the management of all aquatic pest species under the *Inland Fisheries Act 1995*.
- AQIS is responsible for checking for the importation of illegal introduced species and notifying the relevant State Government agency. Action taken against offenders is generally done under the relevant State Act, i.e. *Animal Health Act 1995* and *Inland Fisheries Act 1995*.

10.3 Current Management

Carp Management

The IFS currently operates a major program to control European carp at lakes Crescent and Sorell. This involves substantial resources and on-going State Government funding. The closure of Lake Crescent has meant the temporary loss of an important recreational fishery. While both lakes Sorell and Crescent are a significant distance from the Western Lakes fishery, the ever present threat of access to carp and their illegal translocation, is an issue that requires a high priority ranking in management of the State's fishery.

Distribution Surveys and Barriers to Dispersal

Distributional surveys for pest species have been limited to the Ouse River downstream of the Liawenee diversion canal, the Shannon River and Monpeelyata Canal. Redfin perch were found in the lower sections of the Ouse and Shannon rivers. Additionally, redfin perch are known to occur in Monpeelyata Canal below the incline flume. At the flume site, redfin perch are prevented moving upstream by a velocity barrier during high flows and insufficient water during low flows. The effectiveness of this barrier should be examined under various flow regimes to ensure its continued security. Moreover, the effectiveness of Monpeelyata and Liawenee diversion weirs as barriers to dispersal need to be examined. Other areas to be investigated regarding prevention of pest fish dispersal are, the white water at Bradys Lake and the Nive River.

Electrofishing surveys at First Lagoon and Block Creek were conducted in 2000 following an unconfirmed sighting of a redfin perch in First Lagoon. No redfin were found present. Follow up surveys will be undertaken as a precautionary measure.

Minor surveys of the Clarence River system have been conducted to examine the extent of brown trout distribution and the effectiveness of an existing barrier in preventing upstream dispersal.

A substantial anti-jump barrier has been installed in Liawenee Canal to prevent the movement of pest species into the Western Lakes following the discovery and successful eradication of redfin perch in a dam adjacent to the Great Lake.

Trout Stocking

Stocking of trout into waters within the Western Lakes is carried out by the IFS. Fish are sourced from either the Salmon Ponds hatchery or Liawenee Canal during the brown trout spawning run. While the IFS has protocols in place to limit the risk of accidental introductions, a risk assessment and regular audits need to be carried out to ensure against the inadvertent spread of pest species. Furthermore, despite a broad range of IFS staff undertaking translocation of various fish species e.g. trout, eels and some native species, there is a lack of formal training of staff regarding identification and impacts associated with pest fish. Staff involved in the rearing and translocation of fish should be adequately trained.

Bait Fishing

Currently, bait fishing is permitted in lakes Augusta and Mackenzie. Anglers may use up to two set rods but must not use listed prohibited baits, such as, fish or parts of (except mudeyes) and frogs. At lakes Augusta and Mackenzie, bait fishing is the first preference of 10 percent of anglers, compared to 52 percent for fly-fishing, 30 percent for spin fishing and 8 percent for trolling (IFS unpublished data). Prior to bait fishing being restricted to lakes Augusta and Mackenzie, 12.6 percent of anglers indicated that bait fishing was their preferred method and 1.5 percent of anglers specified bait fishing as their only method of fishing in the Western Lakes (Sloane and French 1991). Consequently, further restrictions on bait fishing will not have a significant impact on the preferred fishing methods of the majority of anglers. Additionally, the collection of animals for bait within the WHA is prohibited under National Parks and Wildlife Regulations.

Education and Community Awareness

As part of the European carp program and wider pest species management, the IFS conducts an educational program aimed at informing the public of the potential threats and impacts pest species can have on native species and the recreational trout fishery. This involves the publication of an introduced species pamphlet, IFS newsletter articles, IFS and fishOnline web sites, public displays and media articles.

Quarantine

Presently, communication with AQIS is carried out on an informal basis. There is an identified need to formalise this arrangement, with the goal of forming a closer working relationship and improved information flow between the IFS and AQIS (Davies and Hussey 1996). The introduction of illegal imports into the State has major ramifications for fishery management that are relevant beyond the scope of the Western Lakes fishery, and therefore need to be addressed at the policy and State fishery management plan levels.

Aquatic Weeds

A limited survey in the Lake Augusta area during 1998 discovered the presence of Canadian pondweed (*Elodea canadensis*). Its introduction was possibly due to the accidental translocation by boat users. Canadian pondweed has the potential to spread rapidly, form dense stands and displace native macrophyte species.

Nature Conservation and Introduced Animal Strategies

DPIWE is currently developing a Nature Conservation Strategy and an Introduced Animal Management Strategy for the WHA. These documents will provide general guidelines for the management of introduced animals within the State and WHA, including trout.

10.4 Objective

Prevent the introduction and dispersal of pest species and minimise their impacts on native aquatic fauna, the recreational trout fishery, and the aquatic environment.

10.5 Prescriptions

- Undertake surveys to determine the distribution of pest fish species within and adjacent to the Western Lakes fishery and transfer this data to a fish distribution database.
- Assess entry points to the Western Lakes in relation to the natural dispersal of pest fish species, and adopt appropriate strategies to minimise risk. Assessment should include;
 - changes in Hydro Tasmania water management,
 - security of in-stream barriers both man-made and natural, and
 - introduction of pests via bait fishing in waters adjacent to and adjoining the Western Lakes fishery.
- Encourage and assist Hydro Tasmania to implement mitigation strategies to prevent the introduction of pest species into the Western Lakes region.
- Monitor First Lagoon for the presence of redfin perch.
- Review the present education program regarding the impacts of introduced pest species, focussing on the following issues;
 - what is a pest species,
 - what values do pest species threaten,
 - implications of illegal bait fishing,
 - implications of illegal introductions (stocking),
 - promotion of good housekeeping for anglers and boat users to prevent the introduction of aquatic weeds, and
 - what the public should do if they find an unknown or suspect species.

- Fish stocks sourced from commercial fish farms or rearing units are not to be used for stocking within the Western Lakes (with the exception of brook trout and sterile strains of triploid rainbow trout). Any juvenile or adult stocks of brook trout or triploids from commercial fish farms are to be subject to stringent screening and be cleared by the IFS as being free of any other fish species. Guidelines for ensuring compliance with this requirement are to be developed before the release of any trout stocks from commercial operations.
- All diploid stocks of brown or rainbow trout are to be sourced from the wild where no contamination with domestic fish is possible. If this is not feasible, then appropriate screening protocols will be adopted so there is a no-risk level of accidental translocation.
- Fish stocks sourced from the Salmon Ponds hatchery are to be subject to quality control to ensure that no accidental translocation occurs. Operating protocols are to be reviewed and where necessary changed to ensure full compliance with a no-risk level. All protocols are to be formally documented and an annual audit report prepared to ensure all protocols are put in place before and during the translocation of fish. The audit report is to contain a statement of compliance and recommendations for the improvement of stocking procedures to reduce the risk of accidental translocation.
- All new and existing IFS staff involved in the rearing and translocation of fish will receive appropriate training to ensure best practice management is adopted when rearing and translocating fish.
- As a priority, IFS will complete development of a fish translocation policy with particular reference to the following issues.
 - Review the approval process for stocking farm dams to eliminate illegal stockings.
 - Review the protocols and procedures for fish rearing units with appropriate audit mechanisms to be established. Exemption permits for the rearing and releasing of trout from rearing units will be issued to specified individuals only, as recommended in the Inland Fisheries Review (Davies and Hussey 1996).
 - Review stocking protocols to minimise the risk of translocation, including the appropriate stocking of trout into high conservation value waters.
- A specific compliance effort will be allocated to the detection of illegal hatcheries and apprehension of offenders. This issue is a high priority.
- The *Inland Fisheries Act 1995* and Regulations will be reviewed with reference to their ability to ensure successful prosecution of offenders regarding illegal possession of fish and the intent to illegally stock waters. Penalties for such breaches are to reflect the seriousness of offences.
- Under Inland Fisheries Regulations, ban the possession of aquatic fauna within the WHA (except those species permitted to be caught under a recreational angling licence).
- The IFS is to establish a formal partnership with AQIS regarding the illegal importation of freshwater fauna, with particular reference to the aquarium industry and importation of live bait (Davies and Hussey 1996).

11.0 Access and Infrastructure

11.1 Background

While fisheries management is the primary focus of this plan, other issues indirectly related to the fishery, such as access, camping and associated support infrastructure, are considered. Many of these issues lie outside the jurisdiction of the IFS yet they impact directly on anglers, their experience and the values of the fishery. Consequently, recommendations are made regarding desirable land management issues. The PWS is responsible for land management within the area and will consider these recommendations in the light of the WHA plan and its proposed review in 2004, and where appropriate, implement suitable strategies.

Four Wheel Drive Tracks

Previously, 4WD access has provided a cross section of anglers with the opportunity to access some of the more remote waters of the Western Lakes. Until recently, the number of 4WD visits to areas such as Pillans and Julian lakes has been relatively low. However, over the past 5-7 years, strong anecdotal evidence indicates that an increasing number of 4WD users are utilising these tracks. This places a high level of demand on the environment and the fishery. Localised degradation and increased harvest of trout from valued waters, can detract from the overall angling experience. If the area is to be managed on a sustainable basis, then track damage and off track vehicle use should be prevented. Additionally, inappropriate access to areas that cannot sustain increased fishing pressure will need to be kept under review to ensure the values of the fishery are protected.

Aerial Access

Aerial access, like all access and land management issues within the WHA is the responsibility of the PWS. Management of aerial access is determined by the WHA plan and may be permitted providing the conditions as set out in the plan (p. 135) are complied with. While the use of float planes and helicopters may provide a niche market to the guiding and tourism sectors, its suitability within the Western Lakes environment has not been accepted by the vast majority of anglers.

Signage

The use of signs within the Nineteen Lagoons region is important in achieving several objectives of this plan. The sign-posting of tracks and individual waters aims to direct anglers to currently under-utilised waters and should aid in dispersing angling effort. This will assist in maintaining a quality angling experience. Signage will also be an essential tool in the promotion of responsible angling, and for disseminating angling regulations at specific waters.

Sign-posting will need to consider inappropriate track development and the consequences of increased angling pressure. All signage should be in keeping with the prescriptions as outlined in the WHA plan (p. 161-162) and be of a standard format. In general, signage will be restricted to the Nineteen Lagoons area.

Camping

Camping is an integral part of fishing in the Western Lakes. It allows anglers to access remote waters and contributes to the overall angling experience. The Nineteen Lagoons area is generally utilised as a day use area, although campervans and tents are also utilised for overnight stays. The primary issues related to camping in the Nineteen Lagoons are the inappropriate disposal of toilet waste and litter. Establishment of toilet facilities, in conjunction with the education of users, should be adequate to address these issues. A continuation of monitoring is required to assess future impacts.

11.2 Responsibility

- PWS is responsible for land management within the WHA. This is achieved under the guidance of the WHA plan.
- IFS as part of its statutory functions is to create, improve and maintain access to inland waters and provide facilities in respect of access to inland waters. Within the WHA this is achieved in consultation with the PWS and the NCB.

11.3 Current Management

Four Wheel Drive Access

There have been significant restrictions and closures of tracks since 1978 and while these have gone a long way to minimising impacts, some fine tuning of existing track management is recommended.

- Pillans - Julian Track

This is the most popular 4WD track in the Western Lakes with an increasing number of anglers using off-road vehicles to gain access to these remote fisheries. The main problems with the track are incompatible environment (marsh areas), poor track routing and a lack of maintenance. The track is currently closed during the early season to protect it from accelerated degradation. While the track aids in dispersing angling effort, there are other issues such as increased angling pressure on remote waters, localised degradation, littering and increased informal camping to consider. Appropriate track management and the implementation of conservative angling restrictions and promotion of sustainable fishing practices, will go some way to managing impacts, without restricting acceptable usage.

- Clarence Lagoon Track

The main problems associated with the Clarence Lagoon track occur at the lagoon foreshore. Indiscriminate use of 4WD vehicles and inappropriate camping practices are issues that need to be addressed if anglers are to be certain of continued access to the lagoon. The use of open fires, wood cutting, litter and human waste disposal are important issues that the PWS will need to manage. Management of 4WD access and the promotion and enforcement of responsible camping practices should ensure the area is maintained.

- Lake Fergus Track

The present Lake Fergus track crosses a large section of private property. During the early season, the area is often wet and boggy and significant damage results from the use of 4WD vehicles. If the condition of this track were to continue to deteriorate, then access to the public may be denied. At present, there are no management measures in place to minimise damage. This is primarily due to the track crossing private land. A seasonal restriction on vehicle access and termination of vehicle access at the WHA boundary should be encouraged.

- Lake Ina/Olive Lagoon Tracks

This area receives little attention yet it could serve as an appropriate route for dispersing angling effort within the southern region of the Western Lakes. The condition of the Nive River bridge and the fact that the track crosses private property are two issues for consideration.

Illegal access by 4WD vehicles beyond the WHA boundary near Lake Ina is an on-going problem. Significant track braiding and localised degradation between the lake and track terminus needs to be prevented.

- Double Lagoon Track

The WHA plan provides for the continued use of this track and for the use of motorised boats on Double Lagoon. Recent trackwork near the lagoon foreshore has confined vehicles to the newly formed section and allowed for easier boating access. Some minor track improvements are still required but if the new section is properly managed, the ability to launch smaller boats will be maintained and degradation to the marsh area minimised. This track will also assist in providing additional opportunities for boat anglers and aid in decreasing boat usage on Lake Ada. The affect of increased access and boating will need to be monitored.

- Christys Creek Track

With the re-routing of the Christys Creek track away from the shoreline of Lake Ada, many areas of degradation have been avoided. However, the upgrading of the track and extension along the western shore of Lake Ada, has resulted in an increase in the number of 4WD's using this track beyond the Lake Ada carpark. While the track offers a route to disperse angling effort, there are other problems associated with improved access, such as increased angling pressure to remote waters, localised degradation, littering and increased informal camping. At present, the primary management action involves a seasonal closure and some hardening of the track to Ada Lagoon.

- Tracks - Other Areas

Several tracks in the Nineteen Lagoons region are closed during the early season. This is done to limit damage caused by 4WD vehicles in accessing remote fisheries. Additionally, the access gate at Lake Augusta spillway is kept closed during the off season. This gate is generally opened late September - early October, but depending on water levels in Lake Augusta, its opening may be delayed by several weeks. There is an identified need to notify the public of the status of this gate and other 4WD tracks in the area.

The service track for the Lake Augusta shacks transverses an area of significant Aboriginal heritage value. The track provides shack owners with 4WD access as well as offering anglers additional fishing opportunities. From a fishery management perspective, retention of access to this area is desirable, however, such access should be compatible with the protection of Aboriginal heritage values as covered by the *Aboriginal Relics Act 1975*.

Access to Long Tarns via the Little Fisher River track is an established access route for walkers entering the North Western area of the Western Lakes. At present, the vehicle bridge crossing the Little Fisher River is in disrepair and unserviceable. The repair of the bridge would encourage anglers to use this alternative route and aid in dispersing angling effort within the Greater Western Lakes.

Signage - Nineteen Lagoons

Only a few waters located adjacent to the main access road are signposted. Few remote waters or tracks within the area have signage. Until recently, existing signs merely gave the name of the water, although some new signs have been erected in response to water specific regulations. These signs provide information about the water's name, (where appropriate approximate location and walk time), general information about management and regulations, and notes on responsible use. New signs should follow this theme.

Camping and Facilities

Camping within the Nineteen Lagoons has been assessed as part of the 1999 WHA plan. The demand for formal camping arrangements was considered insufficient to warrant development of a dedicated camping ground. Free-range camping is permitted in all areas of the Western Lakes.

The PWS has circulated a brochure promoting responsible bushwalking and angling, entitled "Tackling More Than Trout". There are however, a number of locations within the Nineteen Lagoons where inappropriate disposal of toilet waste is evident. With increased visitation, this situation is likely to become worse. There are no toilet facilities within the Nineteen Lagoons.

Boat Ramps

There are four established boat launching sites within the Western Lakes, two at Lake Augusta, and one each at Lake Ada and Lake Mackenzie. There is one rudimentary site at Double Lagoon and small dinghies are launched at various opportunistic locations at lakes Pillans and Julian.

Sites that need to be examined for possible relocation or improvement are Double Lagoon and Lake Augusta west. Any proposed changes to boat ramps must consider the possible impacts on existing attempts to rehabilitate such areas. Informal sites at Pillans and Julian lakes need to be monitored and where necessary appropriate action taken to minimise impacts, most of which relate to formation of informal access tracks.

11.4 Objective

Minimise impacts on the fishery and World Heritage values while maintaining access and reasonable use for recreational anglers and other users.

11.5 Prescriptions

Access Gates - Nineteen Lagoons

- Investigate options for notifying the public as to the status of the access gate at Lake Augusta dam spillway. Options may include IFS and PWS web sites, recorded message attached to PWS Liawenee phone number or a dedicated phone number similar to the Mt. Field ski/road report phone service. Other gated access points could also be included.

Lake Fergus Track

- Recommend for the PWS and IFS to liaise with landowners for the continuation of access to Lake Fergus, with the view to restricting vehicle access on a seasonal basis, as stated in the WHA plan (p. 169).
- Recommend to the PWS for the closure of the track at the WHA boundary to minimise damage adjacent to the lake foreshore and in consultation with NCB rehabilitate damage near the lake (WHA plan p. 169).

Olive Lagoon and Lake Ina Tracks

- Recommend to PWS for retention of vehicle access (as stated in the WHA plan p. 169) to Lake Ina and Olive Lagoon to an appropriate point adjacent to the WHA boundary.
- Investigate options for the upgrading of the Nive River Bridge on the Gowan Brae property.
- Recommend that PWS implement measures to prevent illegal vehicle access beyond the WHA boundary at the eastern end of Lake Ina.

Pillans/Julian Track

- Recommend that the PWS establish an annual track maintenance program to minimise braiding and damage to marsh areas. The track should remain 4WD standard only.
- Recommend that the PWS in consultation with the IFS, assess spur track formation in the Julian Lake area and where necessary, take appropriate management actions to limit damage caused by vehicles.
- Recommend to the PWS for the retention of the seasonal closure of the track at Lake Augusta.
- Recommend for the PWS in consultation with NCB to establish a monitoring program to determine usage and impacts, and to examine options for the long term sustainable use of this track.

Clarence Lagoon Track

- Recommend to the PWS for the retention of 4WD access to the foreshore of Clarence Lagoon (as stated in the WHA plan p. 169).
- Recommend for the PWS to establish measures to prevent access beyond the Clarence River.
- Recommend for the PWS to install signage to inform users of their responsibility in maintaining the area to an acceptable standard.
- Recommend that the PWS implement fuel stove only regulations for all areas within the Western Lakes, including camp sites along the southern shore of Clarence Lagoon.

Double Lagoon Track

- Recommend to the PWS for the continued use of this track. The PWS to maintain the track to an appropriate standard to allow for boating access for smaller boats only.
- Recommend for the PWS to monitor usage and impacts associated with the newly formed track.

- IFS to establish a baseline monitoring program to examine water quality issues that may be associated with any increased boating.

Christys Creek Track

- Recommend for the PWS to maintain current seasonal closure at the Lake Ada boat ramp, do not undertake any works that encourages an increase in vehicle use beyond Ada Lagoon (Little Pine River).
- PWS and IFS should encourage walkers to use this track in preference to 4WD's by erecting signage, and by maintaining foot bridges.
- Recommend for the PWS in consultation with NCB to establish a monitoring program to determine usage and impacts, and to examine options for the long term sustainable use of this track.
- IFS to assess impacts on the fishery relating to increased usage.

Augusta - Shacks Service Track

- Recommend to the PWS for the retention of access to this area to meet fishery management requirements. The significance of Aboriginal heritage values will need to be carefully considered in the provision of access.

Little Fisher River Track

- Investigate the feasibility of repairing the vehicle bridge over the Little Fisher River to allow vehicle access to the start of the Little Fisher River walking track.

Aerial Access

- Ensure that any proposals for aerial access fully meet the conditions as set out in the 1999 WHA plan (p. 135). If they fail to meet these conditions, then the IFS should oppose any such proposal.

Signage and Information

- In conjunction with the PWS, adopt a strategic approach to educate and inform anglers of regulations, management actions and interpretation of the Western Lakes environment. This should include the erection of signage at major access points and at specific waters within the Nineteen Lagoons.
- All signage is to comply with the guidelines as set out in the WHA plan and should be consistent in format.

Boating Access

- Assess all current boat launching sites to determine if they are appropriately located and are serviceable for the launching of suitable craft. Where necessary, recommend for the future relocation or improvement of sites.
- Where appropriate, apply for MAST funding to assist in maintaining existing launching facilities.
- Assess remote water launching sites and associated access tracks, where necessary, make recommendations to PWS to adopt appropriate actions to minimise damage and/or improve sites.

Camping and Infrastructure

- Recommend to the PWS to allow for the continuation of free range camping within the Nineteen Lagoons.
- Recommend that the PWS review the need for serviced toilet facilities within the Nineteen Lagoons and where appropriate establish facilities.
- Recommend that the PWS implement fuel stove only regulations for all areas within the Western Lakes.

12.0 Administrative Matters

12.1 Stakeholder Communications

Appropriate management of the Western Lakes fishery can best be achieved through consultation between stakeholders and natural resource managers. In order to facilitate communications between these parties, an IFS representative and the PWS Senior Ranger from Liawenee will meet on a regular basis with representatives from the angling community and other relevant stakeholders. It is not intended to canvass policy matters, but simply aid in communications.

The IFS will maintain close contact with the PWS regarding WHA planning issues and especially the Walking Track Management Strategy. These issues have potential to significantly impact on the management of the fishery as well as angler access and usage.

12.2 Plan Review and Evaluation

While the plan development process has been an important mechanism in establishing fair and reasonable objectives and management prescriptions, the implementation of the plan is the benchmark by which its success will be monitored. To ensure that proper and sufficient progress of the plan is achieved, the IFS will prepare an annual report reviewing the implementation of the plan and evaluation of management prescriptions. The report is to be circulated to IFAC, DPIWE and the PWS.

12.3 Alterations to the Plan

It is not envisaged that all management prescriptions as described, will remain in their current form for the entire life of the plan. Management prescriptions may need to be altered in order to protect the fishery or meet new requirements for the WHA plan. In order to facilitate changes in the fishery management plan, the following protocols will be followed, with a final decision made by the Minister.

Submissions that seek to change the plan should be submitted in writing to the Director of Inland Fisheries. Submissions should clearly state the nature of the change, the reasons for change and (if submitted on behalf of an organisation), contain a statement of support by the relevant organisation. Submissions are to provide evidence that the proposed change embraces the objectives of the fishery management plan and does not contravene the objectives of the WHA plan.

The Minister will seek advice from the IFS, IFAC, DPIWE and the PWS regarding the appropriateness of submissions and make a final decision accordingly.

12.4 Commencement of Regulations

The angling regulations contained in this plan will have effect on the commencement of the brown trout angling season on Saturday 2 August 2003.

13.0 References

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14.0 Further Information and Acknowledgments

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Acknowledgments

While the previous Sloane and French (1991) draft trout fishery management plan for the Western Lakes was never formally adopted, it contained a well researched and concise history of the Western Lakes fishery, including an extensive overview of nomenclature, land tenure, huts, walking tracks and 4WD tracks. Despite the document now being over ten years old, it serves as a valuable reference source to be acknowledged.

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15.0 Support Information

15.1 Definitions and Abbreviations

Definitions

FISHERY: *Generic description of the general area, but more specifically to mean, all elements of the freshwater fauna including native and introduced species.*

FRESHWATER FISH: *The definition of freshwater fish under the Inland Fisheries Act 1995, includes all freshwater fauna which spends a portion of their life history in freshwater and includes, fish and aquatic invertebrates (crustaceans, insects and molluscs) and includes the spawn, fry or young of such an animal.*

PEST FISH SPECIES: *A fish species, whether native or introduced, that exist outside its 'normal' distribution where it may have a significant detrimental impact on an existing native species or a desirable introduced species.*

ENDANGERED: *Taxa (group) which have suffered a population decline over all or most of their range, whether the causes of this decline are known or not, and which may be in danger of becoming extinct in the near future.*

VULNERABLE: *Taxa (group) not presently endangered but at risk by having small populations and/or by occupying restricted habitats susceptible to rapid environmental change and/or populations which are declining at a rate that would render them endangered in the near future.*

ENDEMIC: *Only found in a particular area.*

DIPLOID: *A fish with a normal amount of chromosomal (genetic) material i.e. two chromosome pairs.*

TRIPLOID: *A fish with an extra amount of chromosomal (genetic) material i.e. two chromosome pairs plus a third chromosome. Resulting in the fish being sterile.*

Abbreviations

IFS	Inland Fisheries Service
DPIWE	Department of Primary Industries, Water and Environment
PWS	Parks and Wildlife Service
NCB	Nature Conservation Branch (DPIWE)
MAST	Marine and Survey Tasmania
AQIS	Australian Quarantine Inspection Service
WHA	World Heritage Area
WHA plan	Tasmanian Wilderness World Heritage Area Management Plan 1999
IFAC	Inland Fisheries Advisory Council
CPCA	Central Plateau Conservation Area

15.2 Appendix A

Stocking - Nineteen Lagoons

<i>Location</i>	<i>Class</i>	<i>Species</i>	<i>Stage</i>	<i>Rate</i>
Dudley	6	BT & RT ³	Fry	Low
First	6	BT	Fry	Low (NRP)
Tin Hut	6	BT	-	Nil
East Rocky	6	BT	-	Nil
Botsford	5	BT	Adult	Moderate
Rocky	5	BT	Adult	Moderate
Chipman	5	BT & RT ³	Fry	BT Mod/RT ³ Low
Carter	5	BT	Adult	Moderate
Second	4	BT	Adult	Moderate
Emma Tarns	4	BT	Fry	Low
Third	4	BT	Fry	Moderate
Paget	4	BT	Adult	Low
Little Blue	3	RT & RT ³	Fry	Moderate
Sandy	3	RT	Fry	Low
Baille	2	BT	-	Nil
Agnes	2	BT	-	Nil
Double	2	BT	-	Nil
Talinah	2	BT	-	Nil
O'Dells	2	BT	-	Nil
Flora	2	BT	-	Nil
Howes Bay	2	BT	-	Nil
Kay	1	BT	-	Nil
Augusta (incl. Dam)	1	BT	-	Nil
Ada (incl. Ada Lagoon)	1	BT	-	Nil

TABLE 15.2: Summary of trout stocking - Nineteen Lagoons. (BT = brown trout, RT³ = triploid rainbow trout, RT = rainbow trout, NRP = Natural recruitment preferred, assess on annual harvest).

If advanced fish are supplemented for fry, then appropriate adjustments to stocking rates are to be made.

15.3 Appendix B

Bag Limits, Size Limits and Angling Methods - Nineteen Lagoons

<i>Location</i>	<i>Class</i>	<i>Species</i>	<i>Size Limit (mm)</i>	<i>Method</i>	<i>Bag Limit</i>
Dudley	6	BT & RT ³	500	Artificial	1
First	6	BT	500	Artificial	1
Tin Hut	6	BT	500	Artificial	1
East Rocky	6	BT	C&R	Fly	0
Botsford	5	BT	420	Artificial	2
Rocky	5	BT	420	Fly	2
Chipman	5	BT & RT ³	420	Artificial	2
Carter	5	BT	420	Artificial	2
Second	4	BT	420	Fly	2
Emma Tarns	4	BT	420	Artificial	2
Third	4	BT	420	Artificial	2
Paget	4	BT	420	Artificial	2
Little Blue	3	RT & RT ³	420	Artificial	2
Sandy	3	BT & RT	420	Artificial	2
Baille	2	BT	420	Artificial	2
Agnes	2	BT	420	Artificial	2
Double	2	BT	420	Artificial	2
Talinah	2	BT	420	Artificial	2
O'Dells	2	BT	420	Artificial	2
Flora	2	BT	420	Artificial	2
Howes Bay	2	BT	420	Fly	2
Kay	1	BT	220	Fly	5
Augusta (incl. Dam)	1	BT	220	All Methods	5
Ada (incl. Ada Lagoon)	1	BT	220	Artificial	5

TABLE 15.3: Bag limits, minimum size limits and angling methods - Nineteen Lagoons. (BT = brown trout, RT³ = triploid rainbow trout, RT = rainbow trout, C&R = catch and release).

All other waters within the Nineteen Lagoons will have a bag limit of two fish per day from any individual water and a minimum size limit of 420 mm.

All waters other than those shown as fly only or all methods in the table above, are designated artificial lure only.



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