

Northern Inland Bioregion

REGIONAL MANAGEMENT OVERVIEW

The only commercial fishery in the northern inland bioregion is the Lake Argyle Freshwater Catfish Fishery. Future management arrangements for this fishery are currently under examination.

REGIONAL COMPLIANCE AND COMMUNITY EDUCATION OVERVIEW

Northern inland commercial fishing is limited to the Lake Argyle Freshwater Catfish Fishery. There is limited compliance monitoring activity in this fishery, with seven commercial contacts made during the period January to June 2001. There were no compliance problems encountered during 2000/01, and monitoring continues to be a low priority.

LAKE ARGYLE FRESHWATER CATFISH FISHERY

Management Summary

The only commercial freshwater fishery in Western Australia is in Lake Argyle in the Kimberley. This fishery specifically targets the catfish or silver cobbler (*Arius midgleyi*) and is managed through a set of licensing conditions. There is a two-month closure during the wet season breeding period of November and December.

As a result of conflict with charter operators on Lake Argyle as well as the general public and conservation groups, Lake Argyle catfish endorsement holders developed an industry code of practice which has been implemented from the 2001 season. The code specifies the accepted means of operation in the fishery, as well as outlining contingency procedures for circumstances when fishing gear has been lost or abandoned.

Future management measures for this fishery will include a review of the possible impact of latent effort within the fishery and a shift in the seasonal closures to better accommodate the wet season breeding period.

Governing Legislation/Fishing Authority
Fisheries Notice no. 665 (Section 43 order)
Condition 55 on a Fishing Boat Licence

Consultation Process
Department – industry meetings

Research Summary

Data for assessing the status of this fish stock are derived from CAES returns provided by industry. These data are analysed annually using standard fisheries models to enable the following status report to be provided for management.

LAKE ARGYLE FRESHWATER CATFISH FISHERY STATUS REPORT

Prepared by S. Ayvazian and G. Nowara

FISHERY DESCRIPTION

Boundaries and access

The fishery is contained in the impounded waters of the Ord River at Lake Argyle and on part of Lake Kununurra. During 2000/01 there were six licensees who had access to the Lake Argyle catfish fishery. There is a net length restriction of 1,500 m. While there is no mesh size restriction, the fishers have adopted a code of practice that states that nets should be no less than 6 inch mesh and 30 mesh deep. All fishers are prohibited from taking any fish whatsoever by means of nets during the period 1 November in any year to 31 December in the same year.

Main fishing method

Gillnet.

RETAINED SPECIES

Commercial production (season 2000/01): 168 tonnes

Landings

The fishery developed from 1979 with increasing catches to 1988/89 (133 tonnes), and then fluctuated at a lower level until 1993/94. Subsequently there was a trend towards increasing catches in this fishery, with the 1999/2000 catch of 230 tonnes being the highest on record. The 2000/01 catch has declined substantially to 168 tonnes (Lake Argyle Catfish Figure 1).

Fishing effort

Nominal effort in this gillnet fishery is calculated as the total number of fishing days by all boats multiplied by the average daily total per boat of 100 m lengths of gillnet used. The fishing effort for 2000/01 was 7,020 units, which is considerably lower than the 1999/2000 fishing effort of 10,788 units (Lake Argyle Catfish Figure 1).

Catch rate

Since 1987/88, the catch rate has remained fairly constant, although it declined in the three years from 1993/94 to 1995/96. Subsequently the CPUE has remained fairly constant at this lower level with a slight increase in the past two years (Lake Argyle Catfish Figure 1).

Recreational component: Not assessed

Stock assessment completed: Yes

Last year a process error model and an observational error model replaced the biomass dynamics model previously used. The process error model forecast an estimate of the catch for 2000/01 of 193 tonnes. The results of this model indicated that the fishery was either fully fished or slightly over-fished. The alternative observational error model predicted a lower catch for 2000/01 of 105 tonnes. Under this model, the fishery would be classified as severely over-fished, and would be approaching the point at which recruitment might be adversely affected. Both models indicate that the current catch levels reported from the fishery are not sustainable.

However, both models require a number of assumptions, and the available data are not sufficiently detailed to determine whether or not these assumptions are valid, creating a high degree of uncertainty around the results. The only way to reduce this uncertainty is to allocate more resources to the gathering of the necessary data from the fishery, and to gain an understanding of some key characteristics of both the fishery and the biology of the species.

Exploitation status: **Over-exploited**

Breeding stock levels: **Decreasing**

Assessment of the current stock indicates that the breeding stock level may not be sufficient to maintain existing recruitment to the fishery if fishing continues at the current level.

NON-RETAINED SPECIES

Bycatch species impact: **Low**

Minimal fish bycatch occurs in this fishery as a result of the large mesh size used relative to the species present in the lake.

Protected species interaction: **Low**

There is an incidental capture of freshwater crocodiles by the freshwater catfish fishery in Lake Argyle. Lake Argyle is designated as a wetland of international importance under the Ramsar Convention. While we assume that the crocodile population has increased in response to the creation of the dam, there are no assessments of the size of the population, nor of the proportion of the population being captured incidentally by the fishery. In the absence of this information, but on the basis of the fishers' anecdotal information, the incidental capture of crocodiles is considered to be of minimal ecological significance.

ECOSYSTEM EFFECTS

Food chain effects: **Not assessed**

Habitat effects: **Negligible**

The nets have minimal impact on the habitat.

SOCIAL EFFECTS

During 2000/01, the average number of fishers involved in the Lake Argyle catfish fishery was 12. Additional employment occurs at local processors' and distribution networks.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year (2000/01):
\$450,000

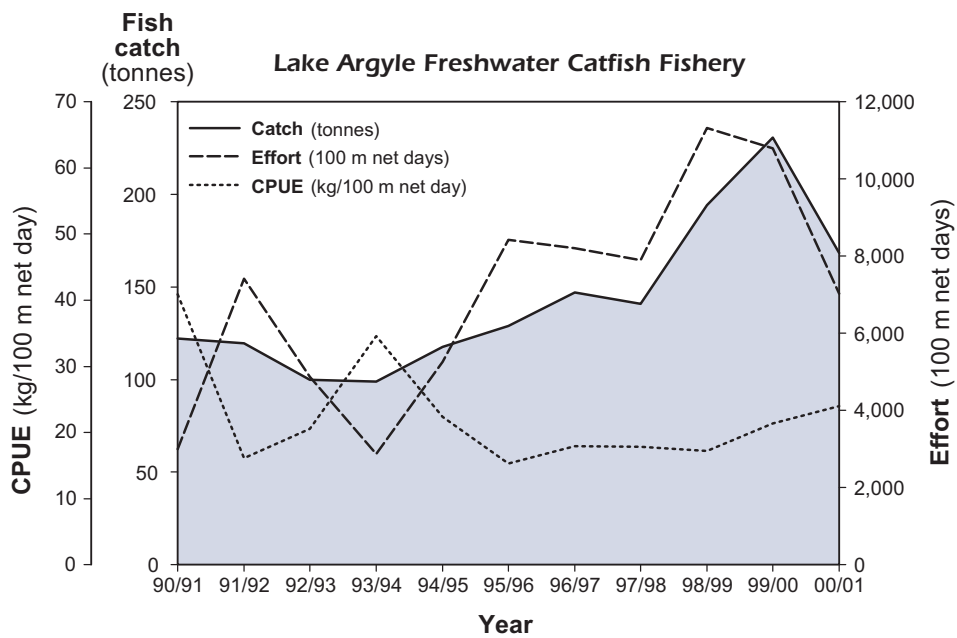
FISHERY GOVERNANCE

Acceptable catch range: **100–140 tonnes**

The acceptable catch range under the current management regime is 100–140 tonnes of Lake Argyle catfish. This estimate is based on the 80% confidence limits around the average of the observed catches for the 10 years up to 1997/98. The catches from 1998/99 to 1999/2000 were well in excess of this range and driven by utilisation of latent effort. While the catch rates indicate that the stock was not declining rapidly in 2000/01, the catch of 168 tonnes was still well above the sustainable level determined by the observational and process models. The reasons for the catches exceeding the acceptable range are related in part to the unknown catchability and age and growth structure of the species. This level of catch still indicates that management action may be required if voluntary decreases in catch and effort do not continue (Lake Argyle Figure 1).

EXTERNAL FACTORS

A research report was made available at the annual management meeting with operators in Kununurra in April 2000, presenting the Research Division's concerns over the continuation of fishing at the high catch and effort levels current at the time. The operators have responded during 2000/01 by voluntarily reducing effort and hence catch. Nevertheless, the latent effort remaining in this fishery is of biological concern because of the specialised reproductive behaviour and the low fecundity of the species, which may predispose the stock to recruitment over-fishing. Anecdotal evidence from sectors of the Lake Argyle catfish fishing industry has indicated a decline in fish size during recent years, supporting the view that exploitation rates are too high.



LAKE ARGYLE CATFISH FIGURE 1

The annual catch, effort and catch per unit effort (CPUE, kg/100 m net day) for the Lake Argyle Freshwater Catfish Fishery over the period 1990/91 to 2000/01.