

Table 6: Summary of fish captures from a permanent fish trap in the Murrumbidgee River at Casuarina Sands between 1980 and 1991.

SPECIES	1980	1981	1982	1983	1984	1986	1987	1988	1989	1990	1991
<i>No. of Days Trap operational</i>	87	146	365	250	150	301	243	335	355	133	20
MURRAY COD	7	23	9	7						1	
GOLDEN PERCH		1				5	36				
SILVER PERCH					252	10	42	4			
MACQUARIE PERCH	4	7	4	1		1		1			
CARP		3	5	2	10	5	61	38	51	91	3
REDFIN						31	14	1,931	248	1,367	31

### 3. THE FUTURE FOR FISH SURVEYS AND FISH MONITORING IN THE UPPER MURRUMBIDGEE CATCHMENT

Effective management of natural resources requires accurate and timely information on the distribution, abundance and change over time of our biodiversity. Information on distribution and abundance is generally collected by inventory or survey programs and this task has been largely completed for fish species in the ACT. A series of stream surveys between 1986 and 2001 has documented the fish fauna of the major catchments in the ACT (Table 7). The only major catchment yet to be fully sampled is the Paddys River catchment although the expected fish fauna of this catchment can be confidently predicted from previous surveys of adjacent catchments.

Table 7: Fish surveys conducted in the Upper Murrumbidgee catchment between 1986 and 2001.

Catchment	No. of sites sampled	Year sampled	Reference
Naas/Gudgenby/Orroral rivers	22	1986–87	Jones <i>et al.</i> 1990
Ginninderra Creek	21	1988	Lintermans <i>et al.</i> 1990a
Upper Cotter River (above Corin Dam)	28	1988–89	Lintermans & Rutzou 1990b
Middle Cotter River (b/w Corin and Bendora dams)	14	1989–90	Lintermans Unpublished data
Lower Cotter River (below Bendora Dam)	31	1990	Lintermans Unpubl data
Molonglo River	23	1992–93	Lintermans Unpubl data
Tidbinbilla River	16	1992	Rutzou <i>et al.</i> 1994
Lower Cotter/Lower Paddys rivers	16	1992	Lintermans 1993b
Middle Paddys River	3	2000	Lintermans Unpubl data
Middle Queanbeyan River	3	1996–97	Lintermans 1999
Lower Queanbeyan River	3	1998 & 2001	Lintermans 1998b, Lintermans <i>et al.</i> 2001
Upper Murrumbidgee catchment	5	1994–96	Harris & Gherke 1997
Upper Murrumbidgee catchment	20	1998–99	Lintermans Unpubl data

In 1998 and 1999 a survey specifically aimed at threatened fish was conducted across 20 sites in the Upper Murrumbidgee catchment (Figure 3). The aim of the survey was to determine the distribution and relative abundance of the three threatened species Trout Cod, Macquarie Perch and Two-spined Blackfish.

Twelve sites were sampled in 1998, and in 1999 an additional eight sites were sampled, plus 6 of the 12 sites sampled previously. Sampling methods used in the survey were boat and backpack electrofishing, gill nets, fyke nets and bait traps. Information gathered during this survey has been incorporated into the individual species accounts.

The requirement for information on change over time of fish populations can only be met by rigorous, long-term monitoring programs. The existing fish monitoring programs in the ACT provide information for both recreational and conservation based management at a number of key locations. The management requirement for such information is unlikely to change in the foreseeable future with the ACT Nature Conservation Strategy (ACT Government 1998) emphasising the need to 'establish a series of long-term biodiversity sampling sites in key and representative habitat types'. The development of an integrated long-term fish monitoring program for the ACT will be an important step in the preparation of an ACT biodiversity monitoring program, which has been identified as a high priority (Environment ACT 1998b). There is no integrated fish monitoring program in the Upper Murrumbidgee catchment outside the ACT, although Environment ACT conducts some limited monitoring of threatened fish species in the Queanbeyan and Goodradigbee rivers. NSW Fisheries monitored five sites in the Upper Murrumbidgee catchment from 1994–99 as part of the NSW Rivers Survey (Harris & Gherke 1997), however this program has been discontinued. Monitoring of the success of the Trout Cod stocking program at a number of sites in the Upper Murrumbidgee was conducted from 1990–99 but has not been continued in recent years. With the proposed future release of environmental flows from Tantangara Dam, a monitoring program is required to both establish a baseline for current fish populations, and to determine any changes in the fish populations as a result of environmental flows.

The spread of alien fish species is also of concern in inland waterways, particularly where there is potential for adverse interactions with threatened species, and a comprehensive fish monitoring program will provide important information on the spread of alien species. Whilst general aquatic biodiversity monitoring may provide sufficient information on the spread of certain species, other alien species (e.g. Oriental Weatherloach) may require a targeted monitoring program. Recovery from disturbance or catastrophic events is another example of a management information requirement which can be met by an integrated monitoring program. The Molonglo River which was contaminated in the 1930s and 1940s by heavy metals from the Captains Flat mines is an example of an aquatic system which needs monitoring. Such monitoring need not be resource intensive or frequent, but needs to be factored into an integrated monitoring program.

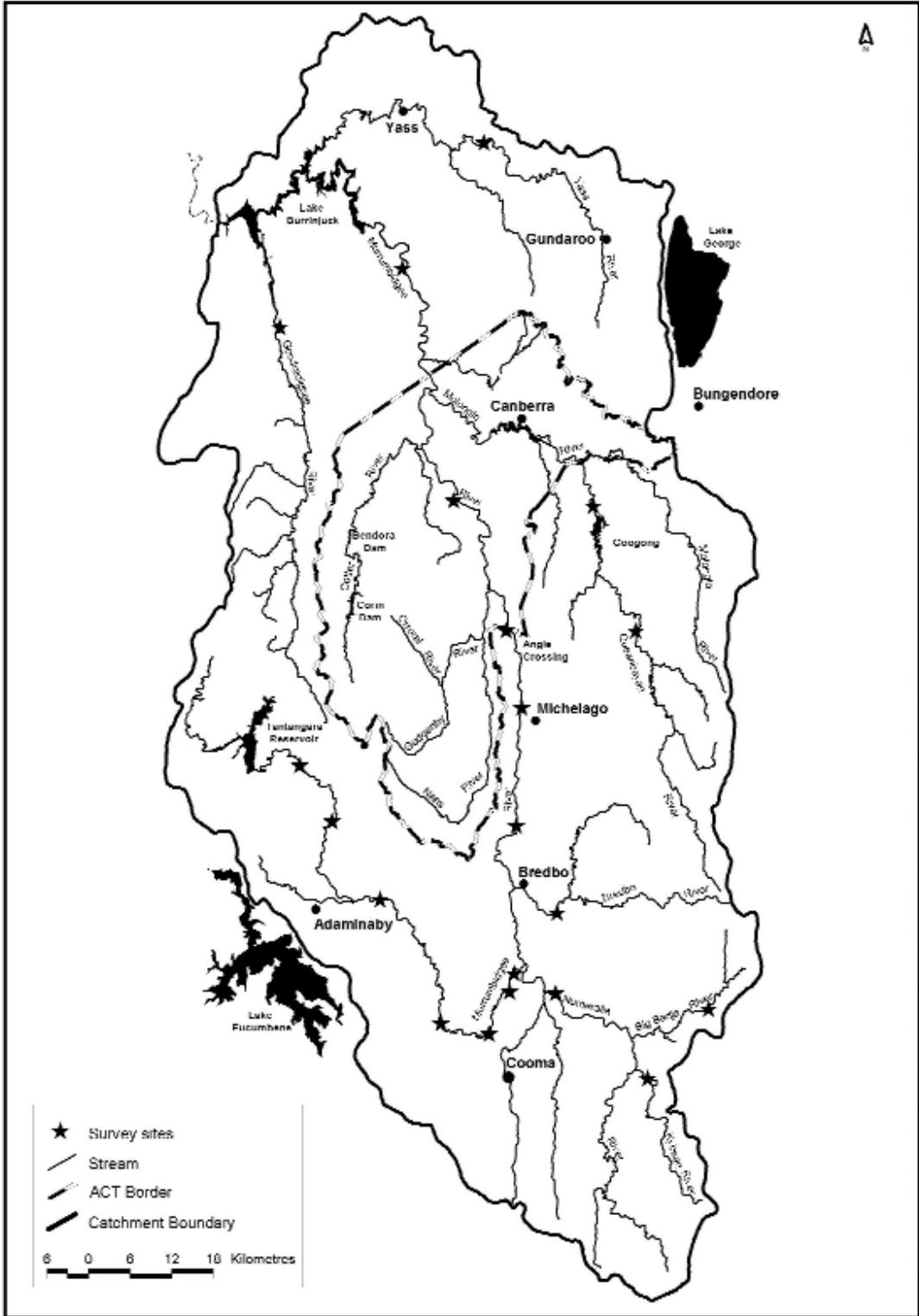


Figure 3: Location of survey sites used in the threatened fish survey of the Upper Murrumbidgee Catchment in 1998 and 1999.