ENVIRONMENT AGENCY

Environment Agency.

South West Region.

An assessment of River Fowey salmonid populations.

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Executive summary.

The River Fowey is considered to be a premier game fishery within both Cornwall and the South West of England. As the result of a declining trend observed in the rod and net catches of both Atlantic Salmon (*Salmo salar, L*) and Sea trout (*Salmo trutta, L*) over the last ten years, concern has been expressed with regard to the present and future status of migratory salmonid stocks within the River Fowey.

In 1997, the River Fowey catchment was surveyed as part of the three year rolling fisheries monitoring programme. Forty-nine sites were sampled throughout the River Fowey catchment (**Figure 1**) using electric-fishing techniques (Appendix 1). The aim of the survey was to determine the distribution and abundance of all fish species, and in particular salmonids, within the River Fowey and its tributaries.

In 1997, the main River Fowey quantitative survey sites recorded highly variable densities of salmon fry. As observed in previous years, the sites situated below Lower Langdon recorded greater densities than those sites situated in the higher reaches. It is likely that this is indicative of the requirement by spawning salmon for suitable river flows in the late autumn / winter that encourage spawning fish to migrate further upstream onto these sites.

The 1997 survey data indicated that trout fry densities on the main River Fowey sites were generally consistent with those obtained in 1991 and 1994.

Juvenile salmon densities recorded on the River Fowey tributaries in 1997 were generally found to be at a lower level than has previously been recorded. Historically, the Warleggan and Cardinham tributaries have been very productive for juvenile salmon (fry and parr). However, in 1997 salmon fry densities on both of these important tributaries were found to be at a very low level. In addition, salmon parr densities in 1997 were significantly lower than those previously recorded.

Present and historic data from the St Neot tributary indicates that there has been a notable reduction in juvenile salmonid production since 1985. This coincides with the impoundment and subsequent operation of Colliford reservoir. It is therefore likely that Colliford reservoir has been a significant contributory factor in reducing salmonid productivity within the St Neot.

Trout fry and parr densities recorded in 1997 throughout the River Fowey catchment were similar to those recorded during other recent survey years. However, evidence is provided that is indicative of a longer term reduction in these populations.

The salmon and sea trout rod and net catches show a large degree of variability on an annual basis. This may potentially reflect changing fishing effort, the availability of fish within the fishing season as well as the impact of environmental factors, especially river flow. This latter factor may influence both fishing effort and fish availability. The salmon rod catch indicates a

decline within the fishery over the last twenty years and this has been particularly evident since 1990. In contrast to the rod catch, the net catch has been much more stable over the last twenty years although a general decline is again evident since 1990.

The observed decline in salmon juvenile densities is of great concern and is evident throughout the Fowey catchment. Every effort must now be made to ensure that the fish that are present are given sufficient opportunity to fulfill their life cycle.

A report investigating the current and historical status of juvenile and adult migratory salmonid abundance within the River Fowey, Cornwall.

Part 1.0 Introduction.

The River Fowey is considered to be a premier game fishery within both Cornwall and the South West of England. As the result of a declining trend observed in the rod and net catches of both Atlantic Salmon (*Salmo salar, L*) and Sea trout (*Salmo trutta, L*) over the last ten years, concern has been expressed with regard to the present and future status of migratory salmonid stocks within the River Fowey. This report discusses the known current status of juvenile salmonid abundance within the Fowey and relates this information to historical survey data. In addition, current and historical rod and net catch data recorded since 1977 is presented and discussed.

The River Fowey rises near the northern edge of Bodmin Moor from where it flows in a predominantly south-easterly direction to the tidal limit at Lostwithiel (SX 106 601), a distance of approximately 35 Km. All of the major Fowey tributaries (Trenant Stream, St Neot River, Warleggan River and Cardinham River) enter the Fowey between Golitha Falls (SX 222 686) and Glynmill Bridge (SX 112 644). There are several tributaries that enter the Fowey estuary and the largest of these is the Lerryn (8 Km -source to tidal water).

There are two reservoirs within the catchment; Siblyback and Colliford. Both of these reservoirs are owned and operated by South West Water Limited (SWWL) and are impassable to migratory salmonids.

Siblyback reservoir was constructed within the period 1967 to 1969 and is managed as a stocked rainbow trout fishery. The reservoir is used to supplement the abstraction at Bastreet Water Treatment Works (WTW) within the River Lynher catchment.

The construction of Colliford reservoir was initiated in 1981 and impoundment of the St Neot river commenced in the Autumn 1983. The reservoir was full by August 1985. The reservoir is operated as a natural brown trout fishery and is used to store water for potable supply.

The SWWL water treatment works at Restormel abstracts raw water from the River Fowey for drinking water purposes. This abstraction is currently licensed to abstract 110,000 cubic metres per day. In 1997, SWWL commenced work on a pumped raw water storage pipeline between Restormel WTW and Colliford reservoir. This pipeline has traversed both the Cardinham and Warleggan tributaries.

Further information describing the hydrology, water quality and land usage within the River Fowey catchment can be found within the Seaton, Looe and Fowey catchment management plan (National River Authority, 1994).

Part 2.0 Environment Agency fishery monitoring and data collection.

In 1997, the River Fowey catchment was surveyed as part of the three year rolling fisheries monitoring programme. Forty-nine sites were sampled throughout the River Fowey catchment (**Figure 1**) using electric-fishing techniques (Appendix 1). The aim of the survey was to determine the distribution and abundance of all fish species, and in particular salmonids, within the River Fowey and its tributaries.

Salmonid data obtained for each quantitative survey site is presented in the form of population densities (numbers of fish per $100m^2$). The final densities have been calculated from a combination of both the raw salmonid population data and the area of river surveyed at each site. In addition to quantitative assessment, dip surveys are also undertaken at the larger main river sites and provide qualitative (Presence /Absence) information on fish abundance.

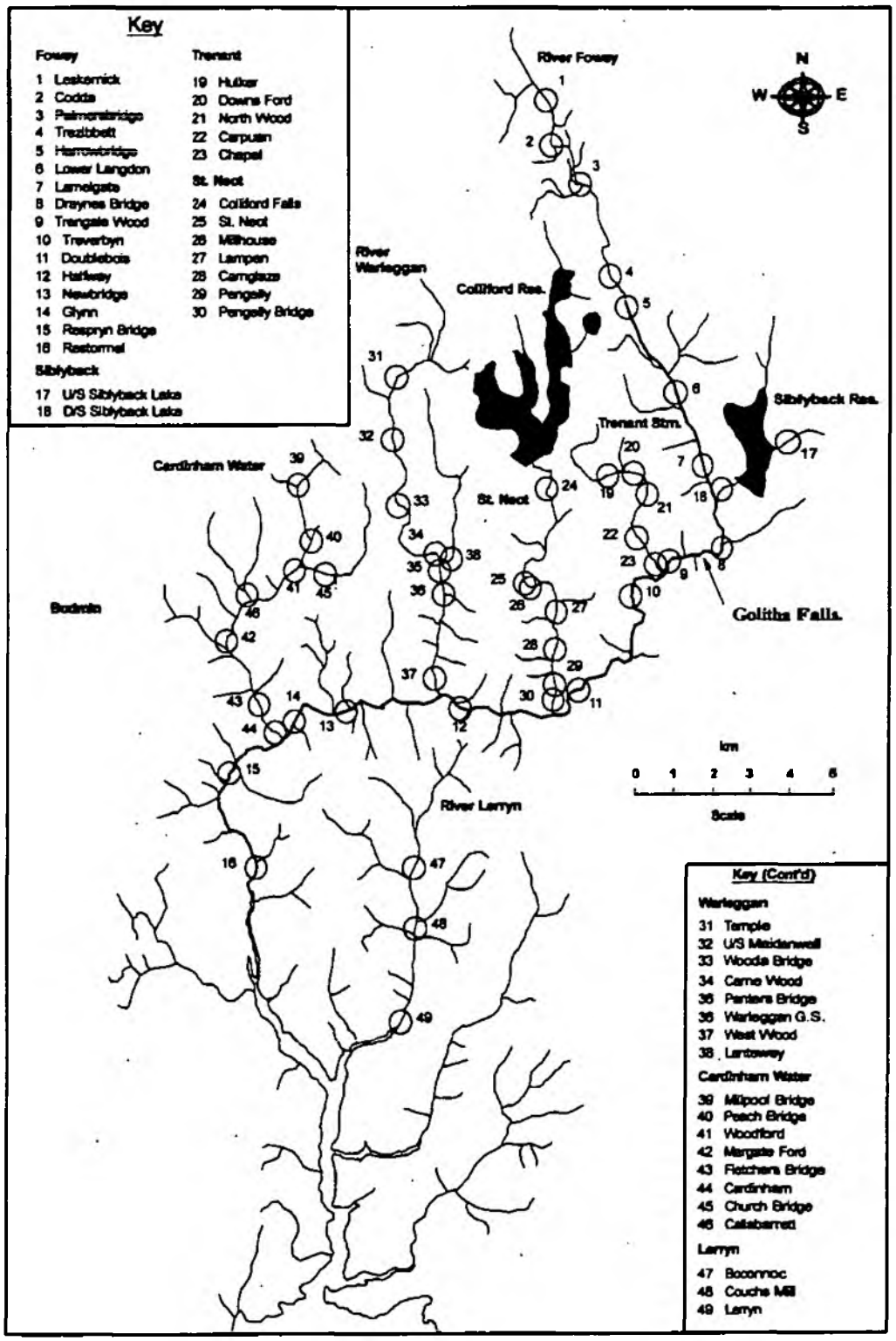
A summary of the 1997 salmonid density data together with the historic electric-fishing survey data for surveys performed between 1977 and 1997 are provided in Table 1 and 2 (salmon fry and parr respectively) and Tables 3 and 4 (trout fry and parr respectively). For the latter tables it must be remembered that young sea trout cannot be distinguished from young resident brown trout. All juvenile trout have therefore been grouped within the data presented as there is no means by which to separate them.

The survey data collected in 1997 has been compared with the historic electric-fishing data obtained from the Fowey catchment since 1977. Data exists prior to this date although the methodology used prior to 1997 is considered to be inconsistent with that used subsequent to 1977. Using only data collected from 1977 enables greater confidence to be placed in any conclusions or trends that can be identified within the data.

The Environment Agency has developed a national Fisheries Classification System (FCS) which recognises six classes of abundance for the fry (0 +) and the parr (> 0 +) age classes of salmonids. This enables the Agency to make a clear comparison of salmonid fisheries on a national basis and facilitates the communication of results both internally and externally.

Figures 2 - 5 (Appendix 3, pp 21 - 24) present the distribution of juvenile salmonid densities recorded within the Fowey catchment during the 1997 survey based upon the national FCS.

Figure (1). Location of Electric fishing survey sites within the River Fowey catchment.



Part 3.0 Juvenile salmonid data.

Current and historical salmon fry and parr data obtained from sites within the River Fowey catchment are presented in Table 1 and Table 2 respectively. Figures 3 and 4 illustrate the distribution of salmon fry and parr data according to the FCS grading scheme for the 1997 River Fowey catchment survey.

3.1 Main River Fowey.

3.1.1 Salmon

In 1997, the main River Fowey quantitative survey sites (sites 1 to 11) recorded highly variable densities of salmon fry. As observed in previous years, the sites situated below Lower Langdon recorded greater densities than those sites situated in the higher reaches. It is likely that this is indicative of the requirement by spawning salmon for suitable river flows in the late autumn/ winter that encourage spawning fish to migrate further upstream onto these sites. This hypothesis is supported by the relatively high fry densities achieved at Harrowbridge (25.6 per 100 m^2) in 1994 which may reflect the wet autumn and winter of 1993. Conversely, the late winter of 1996 / 97 was relatively dry and resulted in low flows. The low fry densities recorded in 1997 on the upper reaches almost certainly reflect this.

The sites situated at Lower Langdon, Lamelgate and Draynes Bridge recorded densities that were consistent with those achieved in 1991. The results from these sites represented an improvement on those recorded in 1994.

In contrast to the above, the sites at Trengale wood, Treverbyn and Doublebois each recorded salmon fry densities that reflect a substantial decline in abundance since 1991. The average salmon fry density recorded from sampling performed at Treverbyn in the years 1977, 1978, 1979 and 1980 was 32.58 fry per 100m^2. This compares markedly with the average density achieved in the years 1991, 1994 and 1997 of 19.7 fry per 100m^2.

Owing to sampling constraints, quantitative surveys are no longer performed below Halfway House. However, fry densities achieved at Respryn (24.0 per 100 m^2) and Restormel (40.9 per 100 m^2) in 1991, which followed the drought year of 1990, indicated that a reasonable level of spawning occurred in the lower reaches at this time. Data obtained from the fish counter situated at Restormel has indicated that a large number of late running fish entered the river in late January and early February 1997. Many of these fish were subsequently known to spawn within the lower reaches of the river. Fry densities at the sites in the lower reaches of the river are likely to have been good in 1997.

The salmon parr densities recorded above Doublebois in 1997 were generally consistent with the densities achieved in 1991 and 1994. As observed with the fry data, parr densities are typically greater at sites downstream of Lower Langdon. In 1997 parr densities at sites below this point were generally consistent with the historic density data. This is reflected in the parr density data

for Treverbyn, which between 1977 and 1980 recorded an average parr density of 13.9 per 100 m^2. In the years 1991,1994 and 1997 the average density was 10.0 per 100 m^2.

3.1.2 Trout.

The 1997 survey data indicated that trout fry densities on the main River Fowey sites were generally consistent with those obtained in 1991 and 1994. However, in the longer term the densities obtained at Palmersbridge, Trezibbet and Lower Langdon for the period 1977 to 1980 (30.5, 25.2, 21.4 respectively) indicate that there has been a substantial decline in trout fry production since 1991 (Average since 1991: 22.2, 6.9 and 11.7 respectively).

Unlike trout fry , trout parr densities obtained from main river sites in 1997 were generally lower than the densities achieved in 1991 and 1994. Comparison of average densities obtained in 1991, 1994 and 1997 at Palmers Bridge, Trezibbet and Lower Langdon (Averages: 23.9, 8.2 and 12.5 respectively) to those from the period 1977 to 1980 (Averages 31.1, 16.4, 27.6 respectively) are again indicative of a substantial decline in abundance.

The River Fowey tributaries.

The Fowey tributaries make an extremely important contribution to migratory salmonid spawning range within the Fowey catchment and the subsequent production of juveniles. The 1997 survey results indicated that a high proportion of the sites situated on these tributaries recorded salmon fry densities that are lower than those previously been recorded over the last 15 years (1983, 1991, 1994 and 1996).This situation was particularly evident on the St Neot, Warleggan and Cardinham tributaries.

3.2 St Neot River.

3.2.1 Salmon.

Historic St Neot river survey data indicates that salmon have spawned infrequently above the site at St Neot. Salmon fry densities recorded at St. Neot prior to 1983, were found to be variable with reasonable densities of 19.6 per 100 m^2 and 27.4 per 100 m^2 recorded in 1978 and 1983 respectively. Subsequent to 1983, all fry densities recorded have been low and on the last 3 sampling occasions (1991, 1994, 1997) the densities recorded have been close to zero.

The site at Pengelly, situated in the lower reaches of the river, has been sampled on each St. Neot survey since 1977. Between 1977 and 1983 fry densities regularly exceeded 40 fry per 100 m^2 with densities of 101.7 and 93.3 recorded in 1977 and 1983 respectively. Densities since 1984 have often failed to exceed 20 fry per 100 m^2.

Historical survey data from the St Neot river indicates that salmon parr densities have been generally lower than those recorded from other Fowey tributaries. Despite this, the St. Neot river would appear to have made an important contribution to migratory salmonid spawning

range and the subsequent production of juveniles.

The 1997 survey identified that salmon parr densities were very low throughout the St Neot (average 1.2 salmon parr / 100m2 for 7 survey sites). The historic data indicates that there has been a notable reduction in parr densities since 1985 and this is consistent with the observed reduction in salmon fry densities.

In summary, the current and historic electric fishing data on the St. Neot would appear to suggest a substantial decline in salmon fry and parr productivity since 1983 and 1985 respectively. This most likely reflects the impact of flow regulation and or water quality changes within the river following impoundment at Colliford. The decline observed in salmonid populations on the St Neot since 1983 contrasts markedly with other important Fowey salmonid spawning tributaries. However, the low densities achieved in 1997 may in part reflect poor salmonid spawning in the winter of 1996/97 which has been evident on other tributaries within the catchment.

3.2.2 Trout.

The trout fry densities obtained in 1997 at most sites sampled on the St Neot were found to be consistent with those dating from 1986. However, it is evident that densities at sites situated in the middle reaches (St Neot to Lampen) were much higher prior to 1985. The observed decline in trout fry densities at these sites is particularly evident between the surveys conducted in 1984 and 1985.

Trout parr densities attained in 1997 were higher than those recorded in 1991 and 1994 and are more consistent with those obtained in 1987. However, current densities are still substantially lower than those recorded prior to the commencement of impoundment at Colliford in 1983.

3.3 Warleggan River.

3.3.1 Salmon.

The 1997 survey identified a substantial decline in salmon fry densities on the Warleggan river. Only 4 out of the 8 sites sampled recorded a density in excess of zero and only one, Warleggan Gauging Station, achieved a density in excess of 10 fry per 100m^2. The extent of the decline is highlighted by the fact that in 1994, 6 of the same 8 sites recorded densities in excess of 20 per 100 m^2. In 1996, 3 out of 7 sites sampled recorded densities that were in excess of 50 fry per 100m^2 with one site (Carne Wood) having an exceptional density in excess of 100 fry per 100 m^2. Although the current densities reflect a sharp decline in the short term there is also evidence of a longer term decline. This is reflected in the densities obtained at two sites; West Wood and Panters Bridge, which have both been sampled since 1977. The average densities achieved for these sites between 1977 and 1979 were 45.5 fry per 100 m^2 and 55.9 fry per 100 m^2 respectively. This compares markedly with the densities for these sites in the period 1991 to 1997 of 22.5 per 100 m^2 and 42.55 per 100 m^2 . The latter result hides the fact that the density for this site in 1997 was 1.6 fry per 100 m^2.

Historical survey data indicates that the Warleggan river has previously recorded the highest salmon parr densities within the catchment. This was again evident in 1997 although densities were generally lower than those recorded in 1991, 1994 and 1996. The historic parr data for Panters bridge and West Wood between 1977 and 1979 produced average parr densities of 17.2 and 12.3 respectively. The 1997 survey result for Panters Bridge (17.0 parr per $100m^2$) was consistent with the historic data, however that for West Wood (6.5 parr per $100m^2$) represented a 50 % reduction in abundance in the long term.

3.3.2 Trout.

Trout fry densities on the Warleggan were generally consistent with data from 1991, 1994 and 1996. However, the exception to this was at the two uppermost sites (Temple and Maiden well), each of which recorded densities lower than those achieved in 1991, 1994 and 1996. The sites situated below these would appear to have made up for this shortfall and this may reflect the prevailing low river flows at the time of spawning. Comparison of the data recorded at Panters Bridge and West Wood since 1991 with that from 1977 to 1979 produced a contrasting result. Recent Panters Bridge data was consistent with the historic data. However, West Wood data again indicated that there has been a considerable decline in fry density over the last 20 years.

Trout parr densities obtained in 1997 were generally higher than those recorded in 1983, 1991, 1994. The 1997 data for Panters Bridge and West wood was consistent with that recorded within the period 1977 to 1980.

3.4 Cardinham River.

The Cardinham is similar to the Warleggan in that historically, it has been one of the most important areas of salmonid production within the River Fowey.

3.4.1 Salmon.

Salmon fry densities recorded in 1997 were substantially lower than those achieved in recent sampling years. None of the 8 sites sampled recorded a density in excess of 10, although unlike the Warleggan, fry were at least present at all of the sites sampled. The 1997 results represent a significant decline in salmon abundance on this river. This can again be put into perspective by comparing the average density obtained for the 8 routine sampling sites achieved in 1991 (25.9 fry per 100 m^2) and 1994 (23.1 fry per 100 m^2) with that of 1997 (4.6 fry per 100 m^2). The data infers a 75 % reduction in fry density even when compared to recent data. A long term view of fry production can be obtained by comparing the densities achieved Margate ford and Cardinham since 1979. The average densities achieved at these sites within the period 1979 to 1983 (3 sampling occasions) were 44 fry per 100 m^2 and 44.5 fry per 100 m^2 respectively. This compares markedly with densities of 9.9 and 3.5 for 1997.

As observed for salmon fry, the parr densities on the Cardinham are substantially lower than those previously recorded. The average density for the 8 routine monitoring sites in the years

1991 and 1994 were 13.12 and 7.1 respectively. The average for the same 8 sites in 1997 was 4.3 parr per 100 m^2. This represents a near two fold reduction in density over the last six years.

3.4.2 Trout.

The fry densities recorded from sites on this tributary represented an overall improvement upon those obtained in 1994 and 1991. Only one site, Peach bridge, recorded densities that were substantially lower than those obtained in 1991 and 1994.The historic data from Margate ford and Cardinham obtained average fry densities in the years 1979 and 1980 of 40.2 an 25 respectively. In the period 1991 to 1997 the respective densities were 21.8 and 8.4 and are indicative of reduced spawning and subsequent fry production in recent years.

As observed with the fry data, trout parr were present at all 8 of the sites sampled and the densities recorded in 1997 were generally consistent with those obtained in 1991 and 1994. They were however slightly lower than those recorded in 1983. The densities at Margate ford and Cardinham in 1979 and 1980 were 34.8 fry per 100 m^2 and 31.1 fry per 100 m^2 respectively. The average density for the period 1991 to 1997 were 24.7 and 30.3 respectively. This would infer that there has been a slight decline in trout parr productivity within this river over the last twenty years.

3.5 Trenant Stream.

Within the Trenant tributary, salmon distribution is entirely limited to the site situated furthest downstream. A natural waterfall at Carpuan (SX 204 691) may prevent upstream salmon migration into this tributary. This obstruction does not however prevent the access of sea trout. Historic survey data indicates infrequent use of this tributary by salmon as a spawning site. The stream is influenced by china clay mining and clay fines from Parsons Park china clay pit (SX 195 705). This pollutant has the potential to restrict salmonid egg hatching ability and the subsequent survival of juveniles.

3.5.2 Salmon.

The Trenant tributary was first sampled in 1982 and again in 1991. On these occasions salmon fry were found to be absent. However, a density of 20.2 fry per 100 m^2 was achieved in 1994 at Chapel. Fry were again found to be absent in 1997. This tends to indicate that the use of this tributary by spawning salmon is likely to be related to the availability of suitable river flows. The relatively high flows encountered in 1993 /1994 may have enabled successful spawning.

As observed for fry, salmon parr have only been recorded from the site at Chapel. However unlike fry, parr have been recorded on each sampling occasion since 1991. The density recorded in 1997 is the highest yet achieved and was more than twice the density of that recorded in 1994.This result tends to infer that water quality within the tributary has been improving over the last 10 years and production is now most likely limited by the availability of suitable river flows.

3.5.1 Trout

Unlike salmon, juvenile trout (fry and parr) have been recorded on each sampling occasion at all sites sampled within the Trenant. Trout fry densities in 1997 were generally consistent with those recorded in 1994. However, these densities did reflect a substantial reduction upon those recorded in 1982. This decline was apparent at all five of the sites sampled.

Trout parr densities recorded in 1997 represented an improvement on those from 1994 although again densities were generally lower than those recorded in 1982. It is notable however that despite the observed substantial reduction in fry densities, parr densities obtained at sites in the upper reaches in 1997 and 1994 were approximately twice that of those recorded in 1982. This situation may reflect increased fry survival due to improved water quality.

3.6 Siblyback Stream.

The Siblyback stream drains Siblyback reservoir and has been surveyed in both 1994 and 1997. The dam is impassable to migratory salmonids. As such, only the site situated downstream of the reservoir has the potential to support migratory salmonid spawning.

3.6.1 Salmon.

Salmon fry were first recorded at a low density in 1997 and this result was indicative of extremely limited spawning.

Salmon parr have been recorded on both sampling occasions and although present in low numbers, the densities achieved in 1997 represent a slight improvement on those attained in 1994.

3.6.2 Trout.

The trout fry densities achieved in 1997 at the site situated downstream of the reservoir reflected a 75 % reduction in abundance compared to the 1994 data. The site situated above the dam obtained an almost identical density to that achieved in 1994.

As observed for the trout fry, trout parr densities obtained at the downstream site represented a 40 % reduction in density compared to the 1994 data. The upstream site density was also lower than that obtained in 1994 although this decline was less significant.

3.7 Lerryn River.

The River Lerryn was first sampled in 1991 and the data indicates that salmon spawning is limited to the middle and lower reaches. The site at Bocconoc has never recorded salmon and a weir situated immediately downstream of the site is considered to inhibit adult migratory salmonid movements.

3.7.1 Salmon.

Salmon fry densities recorded at Couch's Mill and Lerryn in 1997 represented a slight improvement on the densities obtained in 1991 and 1994.

Salmon parr distribution on the River Lerryn reflects that for the fry. Densities achieved in 1997 were slightly lower than those recorded in 1991 and 1994 and indicative of limited spawning.

3.7.2 Trout.

The trout fry densities on the river Lerryn sites sampled in 1997 were generally consistent with those achieved in 1991 and 1994. However, trout parr densities were much lower in comparison to those achieved in 1991 and 1994.

Part 4.0 Description of the rod and net fishery on the River Fowey.

The River Fowey is a noted "late" salmon river in which salmon, predominantly grilse (one sea winter fish) in the range of seven to thirteen pounds enter the river between the period September to February.

The River Fowey has historically been noted for its very large runs of sea trout. Large sea trout are known to enter the river in the months of April and May with the larger run of school sea trout taking place in July.

The River Fowey has for many years supported a net fishery for migratory salmonids. Within the last twenty years there have frequently been four commercial seine nets operating. In 1997, following the recently renewed Net Limitation Order (1997-2007) the river now supports two commercial estuary netting licences.

In 1997, the remaining River Fowey commercial netsmen agreed to a "buy-back" of netting time that extended from 21 April until 14 June. In 1998, this buy-back of netting time was in operation from 2 March until 14 June. This measure has been introduced by SWWL as mitigation for Colliford reservoir. The Environment Agency assisted in brokering this agreement in an attempt to help conserve the spring salmon stock and large, early running sea trout.

The salmon rod fishing season on the river Fowey opens on 1 April and closes on 15 December. The sea trout fishing season opens on 1 April and closes on 30 September.

4.0.1 River Fowey salmon rod and net catches.

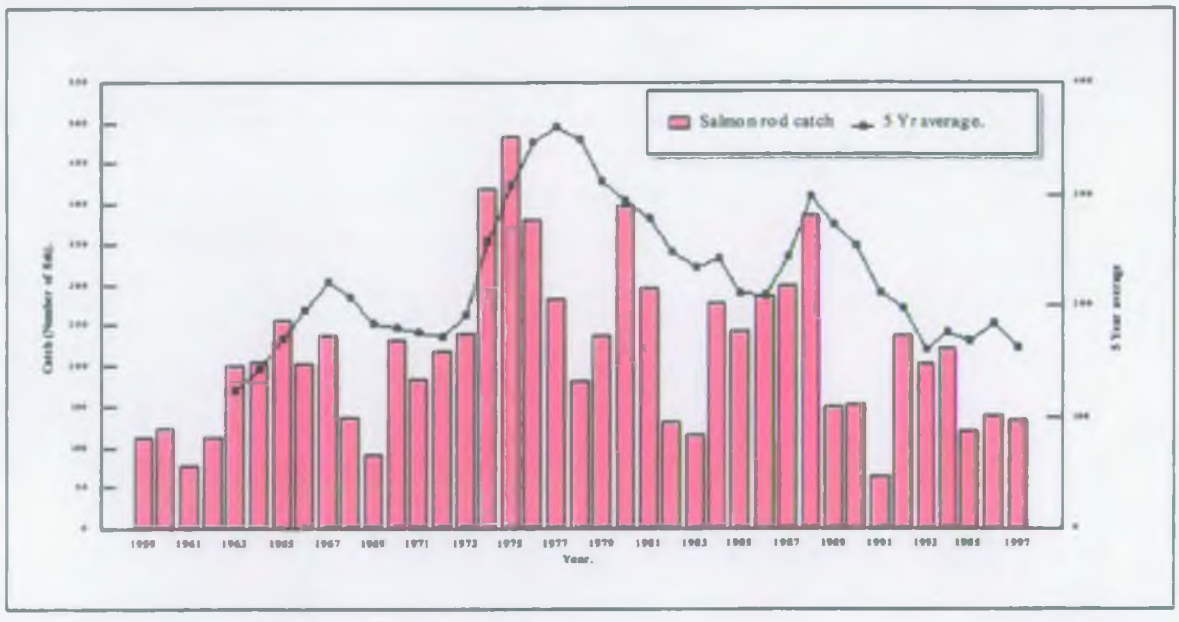
Rod catches recorded from the River Fowey since 1959 are presented in Figure (6) and Figure (7) respectively.

Figure (6) indicates that the river Fowey salmon rod catch exhibited an increasing trend between

1959 and 1976. This situation may reflect increasing angling participation or improved rod catch return rates.

The most notable feature of the River Fowey salmon rod catch is the year to year variability in the data. This most likely reflects the fishery's dependence upon the availability of suitable flow levels that affect not only fish taking behaviour but also the availability of fish within freshwater during the fishing season. As on other spate salmon rivers, low rod catches are nearly always recorded in drought years. Year to year variability can to a certain extent be reduced by observing the running 5 year average. This has been provided on Figures (6) and (7) and helps to identify trends within the data.

Figure (6) Total declared rod catch of salmon for the River Fowey- 1959 to 1997.



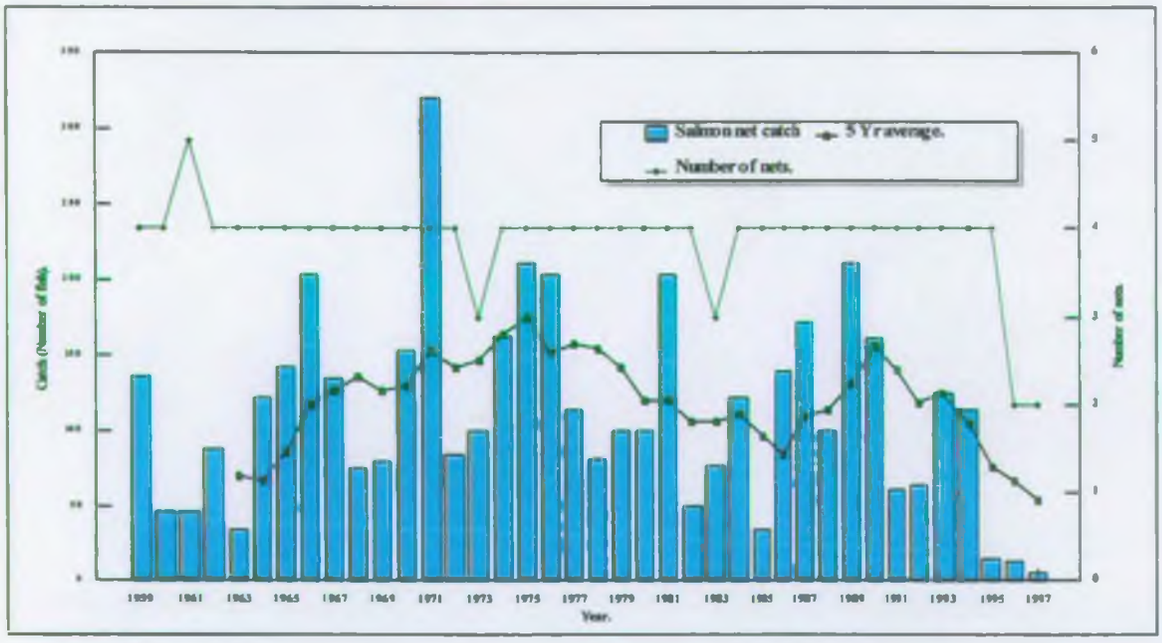
The Fowey salmon rod catch data indicates that there has been an overall decline since the mid 1970s. This is consistent with other South West rivers and coincides with changes in land usage, the introduction of monofilament gill nets, the prevalence of Ulcerative Dermal Necrosis (UDN) that affected many South west rivers in the 1970s and increasing commercial pressure on the high seas, notably for grilse off the West coast of Ireland.

Despite the overall declining trend observed since the 1970s, there has been a more dramatic decline in catches since 1989 and 1990. From this point, catches have fallen dramatically and although they improved in the relatively wet years of 1993 and 1994, catches have since fallen back. The extent of the decline can be appreciated by comparing the total declared rod catch for the period 1988 to 1997 (181 salmon) to that for the period 1970 to 1979 (286 salmon). The magnitude of the difference between these two figures provides evidence to quantify the extent of the decline of salmon within the river Fowey.

Figure (7) presents the River Fowey salmon net catch data for the period 1959 to 1997. As observed with the rod catch data, the net catch displays a large amount of variability on an annual
basis. This variability is likely to reflect freshwater flows within the estuary. High river flows tend to make netting less efficient and will encourage fish to run up the estuary into freshwater. Conversely, under prolonged low river flows fish will not be encouraged to enter the estuary.

The graph indicates that between 1991 and 1995 the number of licensed nets on the river remained at 4 with 3 being in operation in 1973 and 1983. Despite the generally consistent number of nets, the effort applied during the season may vary on an annual basis. Therefore, both fish availability and the level of netting effort applied is likely to combine to produce the observed variability within the data.

Figure (7) Total declared net catch of salmon for the River Fowey - 1959 to 1997.



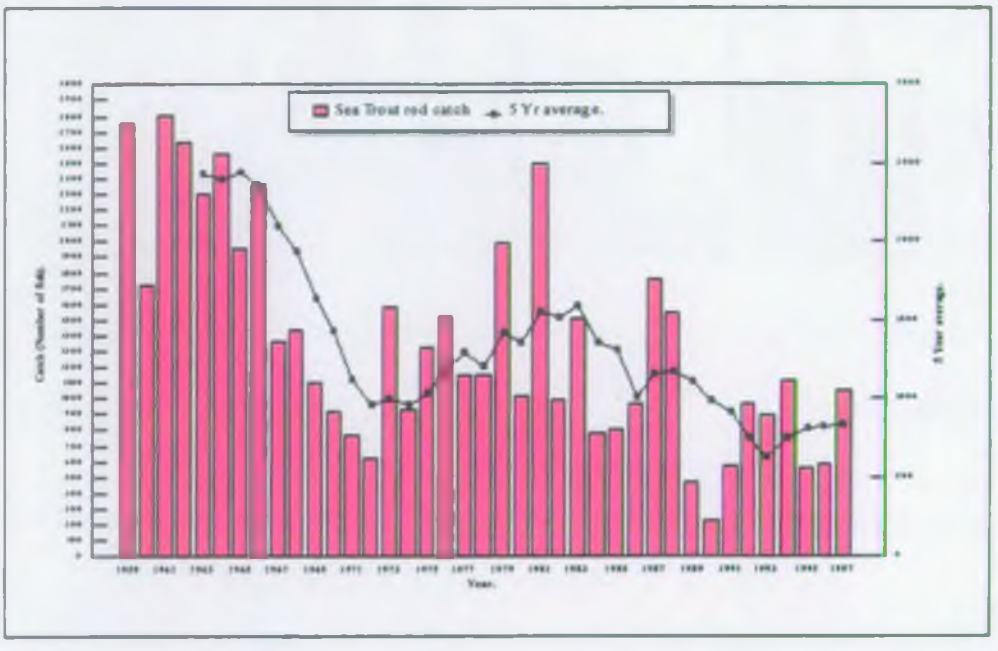
It is apparent that until 1990, salmon net catches were generally consistent with those from the 1960's. This is particularly evident from the 5 year running average displayed on the graph. The net catch achieved in 1989 was consistent with the highest recorded net catch within the last 20 years. Despite this, as observed in the salmon rod catch, a decline in the net fishery catch again coincided with the 1989/ 1990 drought years. There was some resurgence in the relatively wet years of 1993 and 1994 although the net catch in 1995 drought year was again low. The net catch in 1996 and 1997 have been the lowest on record. It is likely that this reflects both a lack of salmon, a 50 % reduction in the licensed nets and in 1997, the introduction of the buy back of netting time from the netsmen.

4.0.2 River Fowey sea trout rod and net catches.

It is apparent from Figure (8) that the sea trout rod catch has declined significantly since the mid 1960s and reached a low point in the early 1970s. Over the following decade, catches again began to improve, with the catch in 1981 being consistent with those from the early 60s and in excess of 2000 fish.

Despite this short lived improvement, the sea trout rod catch has continued to exhibit an overall declining trend since this time. This reduction would appear to be also evident in juvenile trout abundances, notably on the Warleggan, Cardinham and St. Neot tributaries. The 1997 sea trout run provided a catch that was consistent with the highest catches made within the last 10 years. However, this catch still only represents 25% of that recorded 20 years ago.

Figure (8). River Fowey sea trout rod catches - 1959 to 1997.

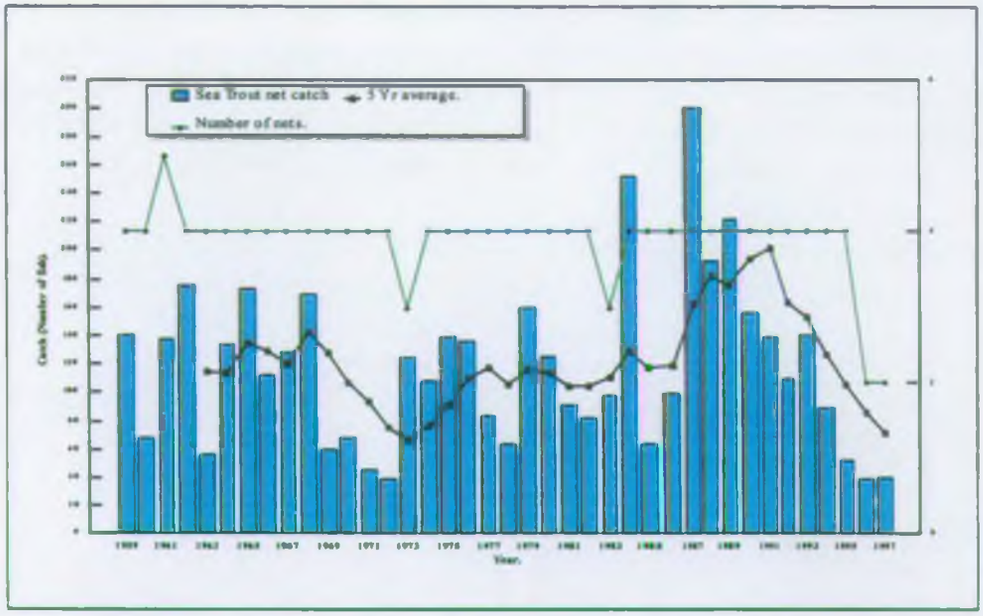


Owing to the large mesh diameter of a salmon seine net, the average net caught sea trout are relatively large in comparison to those caught within the rod fishery. This is borne out by the fact that within the period 1990 to 1995 the average rod caught sea trout was one pound six ounces and that for the net fishery over the same period was two pounds fifteen ounces. This therefore accounts for the fact that the sea trout net catch is substantially lower than that for the rods.

The net catch of sea trout (Figure 9) has declined in a similar fashion to that for the salmon. This decline has been most evident within the last ten years. This is well demonstrated by the five year running average and may reflect a combination of reduced netting effort and the lower availability of salmon and larger sea trout.

In summary, the salmon and sea trout declared rod catches indicate that there has been a substantial decline in catches over the last 20 years. This decline became more intense in 1989 and 1990 and the catches from these years were among the lowest ever recorded. The current (1997) rod catches are consistent with those within the last 10 years but are still far short of historical catches

Figure (9). River Fowey sea trout net catches - 1959 to 1997.



Part 5.0 Conclusions.

1. In general, the 1997 juvenile survey performed on the River Fowey catchment identified that migratory salmonid populations and particularly salmon were at their lowest level for many years.

2. Historically, the St Neot river appears to have been a relatively important spawning tributary for both salmon and sea trout within the Fowey catchment. It is evident that salmon and sea trout spawning and the subsequent production of pre smolts has declined substantially since 1983 and 1985 respectively. These years coincide with the impoundment of the St Neot to form Colliford reservoir. The subsequent flow regulation and changes in water chemistry following impoundment would appear to have maintained this decline in juvenile density. Juvenile salmonid densities since 1985 have been consistently below those that were achieved prior to this year.

3. The Warleggan and Cardinham rivers have recorded their lowest ever salmon fry densities in 1997. The historic survey data from sites situated on these tributaries provides evidence of a long term decline in salmonid populations on these tributaries.

4. The salmon and sea trout rod and net catches show a large degree of variability on an annual

basis. This may potentially reflect changing fishing effort, the availability of fish within the fishing season as well as the impact of environmental factors, especially river flow. This latter factor may influence both fishing effort and fish availability. The salmon rod catch indicates a decline within the fishery over the last twenty years and this has been particularly evident since 1990. In contrast to the rod catch, the net catch has been much more stable over the last twenty years although a general decline is evident since 1990.

5. The sea trout rod catch has declined by approximately 75 % since the 1960s. A recovery occurred in the early 1980s although from this point until the early 1990s a substantial decline has been evident. This decline has generally reflected in the juvenile densities throughout the catchment.

6. The observed decline in salmon juvenile densities is of great concern and is evident throughout the Fowey catchment. Every effort must now be made to ensure that the fish that are present are given sufficient opportunity to fulfill their life cycle.

Part 6.0. Recommendations.

1. To continue to monitor salmon densities on the Cardinham and Warleggan tributaries. Further sampling will be undertaken in 1998 to assess the success of the 1997/ 98 spawning.
Action : Fisheries Science Team.

2. To identify the relationship that exists between river flow and adult migratory salmonid migratory behaviour. This could be undertaken using data obtained at Restormel Fish Counter to assess the impact of current and future operating arrangements for Restormel WTW.
Action: Fisheries Science Team.

3. To negotiate with SWWL on the operating arrangements and compensation flow offered to the St Neot stream by Colliford Reservoir. This will aim to address the observed decline in salmonid production observed on this tributary over the last 23 Years.
Action: Cornwall Area Fisheries / SWWL.

4. Monitor the success of habitat improvement works initiated to increase spawning gravel area.
Action: Fisheries Science Team.

Part 7.0. References.

1. National River Authority (1994) - National Fisheries Classification Scheme. A guide for users. R& D report No. 244.

2. National River Authority (1994) - Seaton., Looe and Fowey Catchment Management Plan.

3. Heathwood et al (1984) - The estimation of animal population size by the removal method. Journal of the Royal Statistical society Vol 33, No. 2. pp 196-202.

Part 7.0 Appendices.

Appendix 1. Electric fishing quantitative survey methodology.

Quantitative surveys are carried out by selecting a combination of one and three run survey sites in areas of river with an average width of less than 10 metres.

- For each survey site, a stop net is fixed at the upstream and downstream end of the survey site, enclosing the survey area.
- The enclosed area is fished in an upstream direction. The site is fished with either one or three sampling runs using pulsed direct current electric-fishing apparatus. The number of runs for any given site is dependent upon the classification given to each site within a given reach of the river.
- All fish caught during the survey are retained in aerated tanks, anaesthetised with 2-phenoxyethanol and fork length measurements recorded. This is undertaken for all of the salmonids and for most other fish species caught. In addition, scales samples are taken from some fish for age determination purposes.
- All of the fish caught are returned to the site following completion of the survey.

The data for the three run survey sites is processed using the Environment Agency - South West Region population density software that is based on Heathwood et al (1984). This system calculates an estimate of the population size (N^) along with relative upper and lower probability limits from the catch data. For every three run site there are a number of associated one run sites. These are clustered together on the basis of geographical location, similarity of habitat characteristics and average width. A multiplication index (N^/Catch 1) is calculated for each salmonid species and age group from the three run site data. This index is then subsequently applied to the one run sites within the three run sites cluster. This therefore provides a population estimate for the one run survey sites from which the final population density for each age class can be determined.

Qualitative surveys (Dip surveys) are conducted in areas of river that are considered to be too wide or too deep to attempt quantitative surveys. These surveys consist of electric-fishing a section of river for 20 minutes (primarily shallow pools and riffles) but without stop nets present. The results obtained show which fish species are present. In addition, for salmonids age class data is obtained.

Appendix (2).

1997 electric fishing results for salmonids obtained from survey sites situated on the River Fowey. Data is presented in the form of FCS classes (Level 1 - Absolute classification)

1) **Figure (2) Salmon fry (0+) densities - River Fowey- 1997.**

2) **Figure (3) Salmon parr (1+) densities - River Fowey- 1997.**

3) **Figure (4) Trout fry (0+) densities - River Fowey- 1997.**

4) **Figure (5) Trout parr (1+) densities - River Fowey- 1997.**

Figure (2) Salmon fry (0+) densities - River Fowey- 1997.

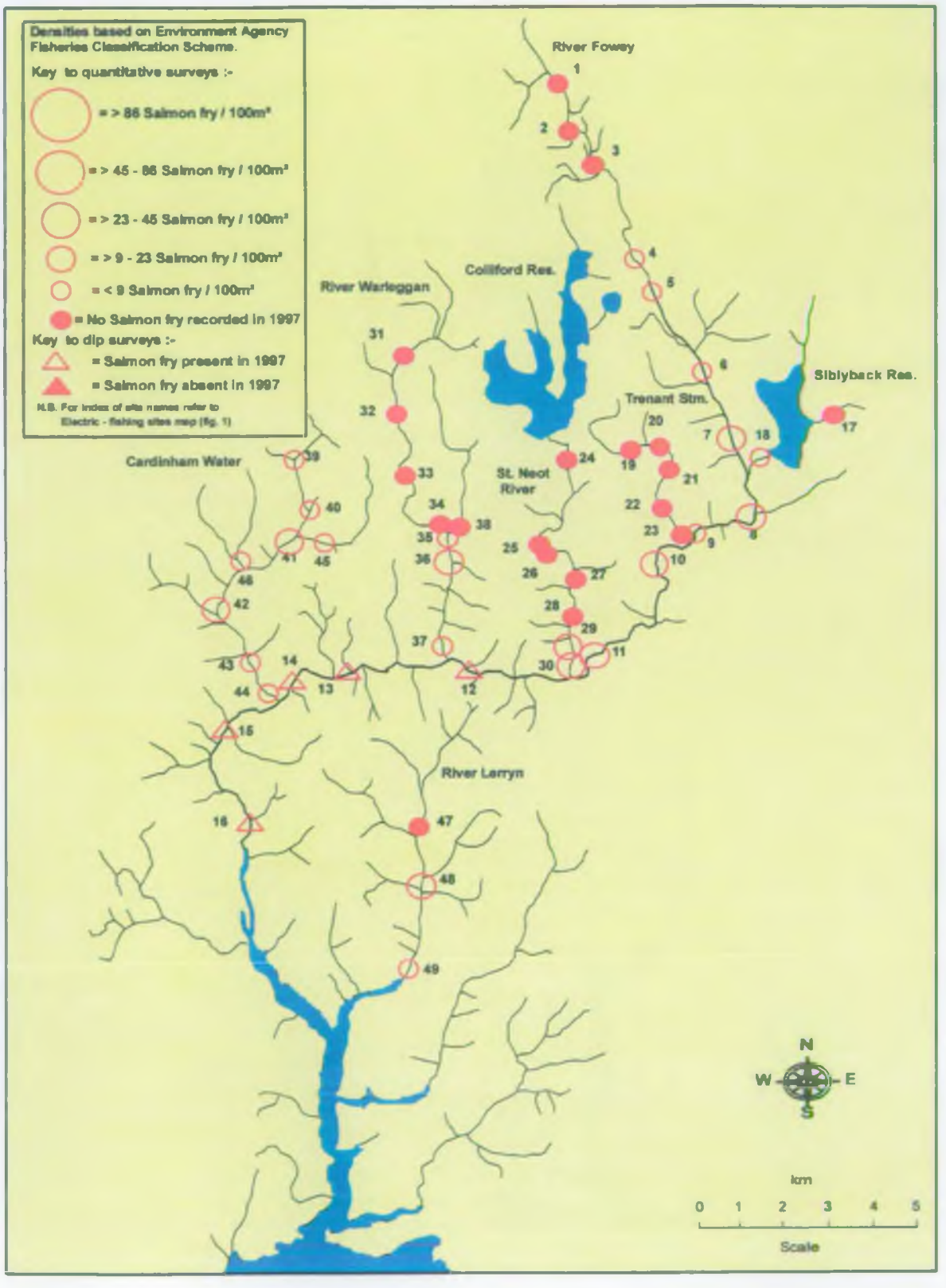


Figure (3) Salmon parr (1+) densities - River Fowey- 1997.

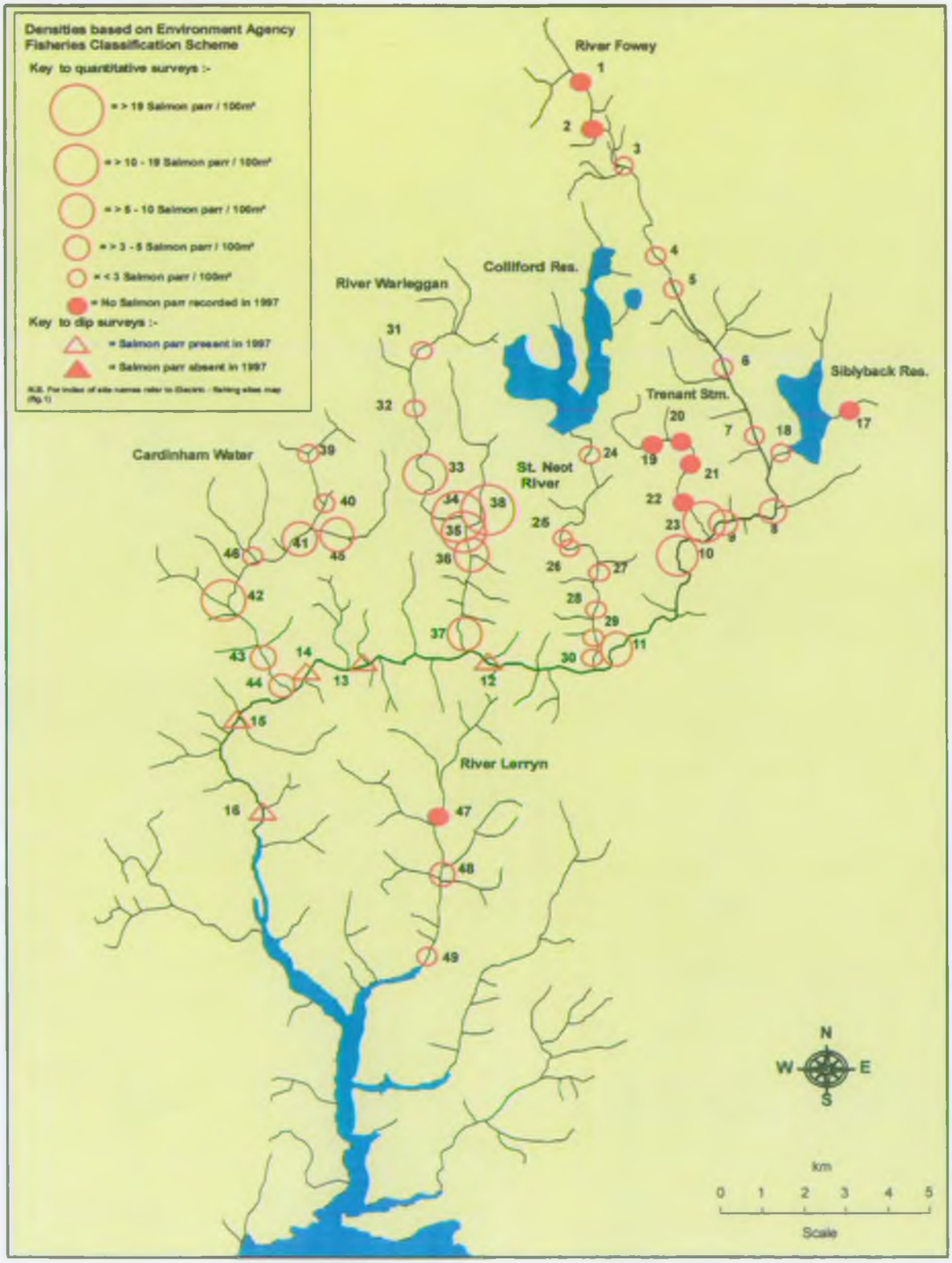


Figure (4) Trout fry (0+) densities - River Fowey- 1997.

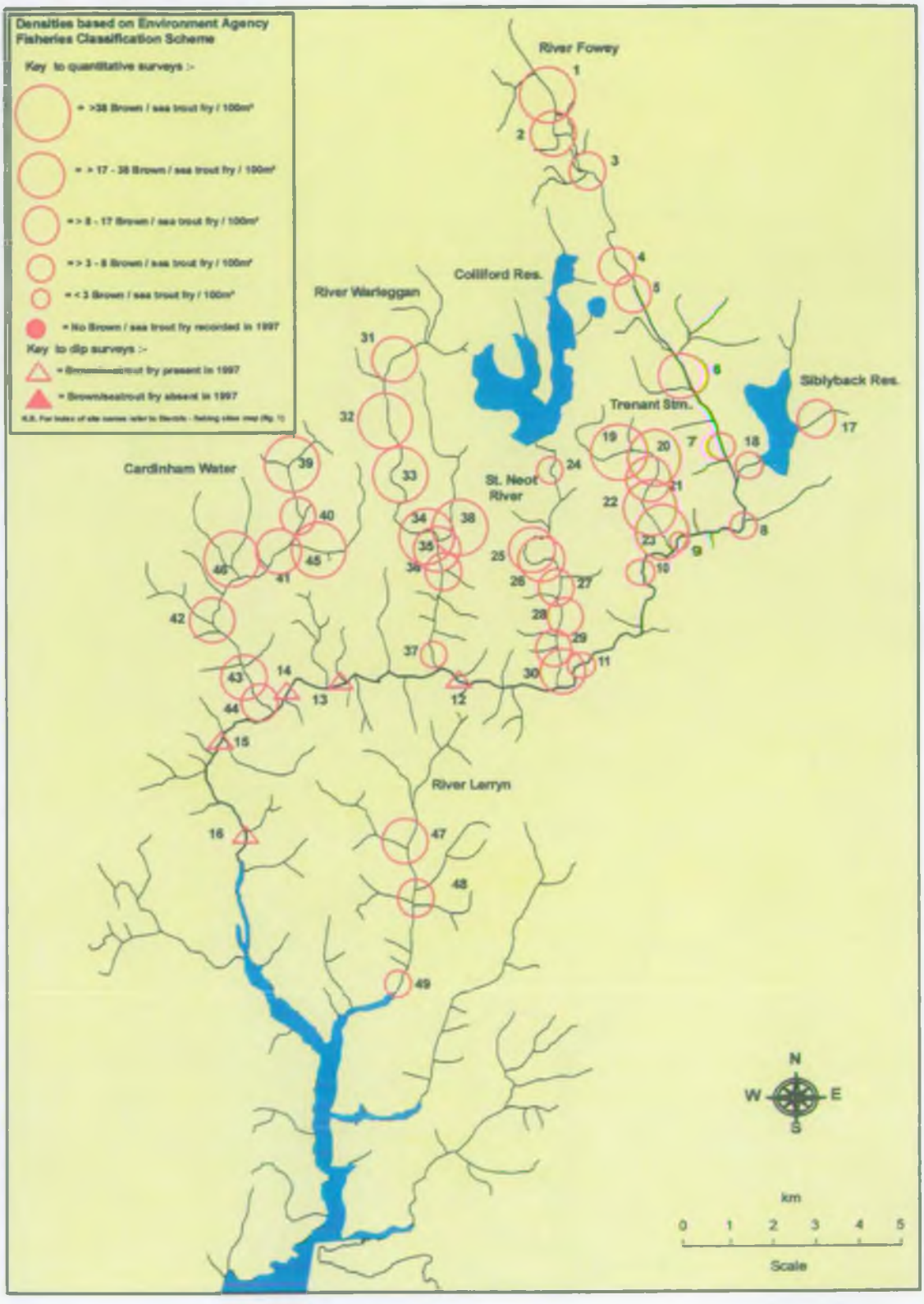
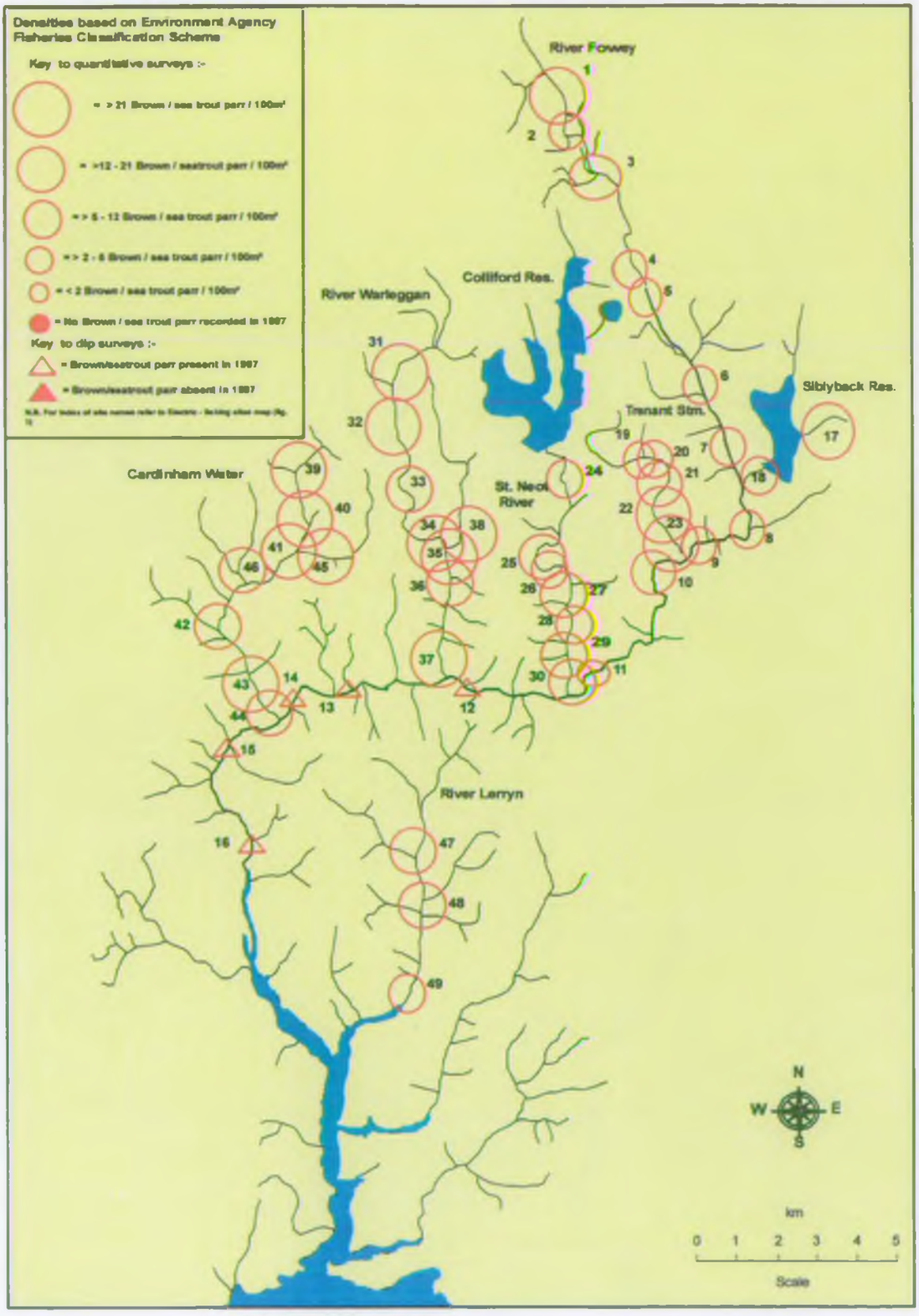


Figure (5) Trout parr (1+) densities - River Fowey- 1997.



Appendix (3).

River Fowey Juvenile Salmonid data - 1977 to 1997.

Table 1 - Salmon fry density.

Table 2 - Salmon parr density.

Table 3 - Trout fry density.

Table 4 -Trout Parr density.

Table (1)

Historical Salmon Fry (0+) Electric-fishing population densities for the Fowey catchment

RIVER / Site	1977	1978	1979	1980	1982	1983	1991	1994	1995	1996	1997
FOWEY											
Lostwithiel	-	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0
Cuddo	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Palmersbridge	0.0	0.0	0.0	19.0	-	-	0.0	4.7	-	-	0.0
Trenibbott	0.0	0.0	1.7	7.9	-	-	0.0	2.6	-	-	5.2
Harrowbridge	-	-	-	-	-	-	-	35.6	0.3	0.3	1.9
Lower Langdon	0.0	0.0	0.0	7.9	-	-	0.6	1.4	3.3	-	5.6
Lanteglos	-	-	-	-	-	-	1.0	4.1	5.1	11.1	16.5
Draynes Bridge	-	-	-	-	-	-	34.6	6.0	-	-	21.5
Trengale Wood	5.6	-	-	-	-	-	9.9	10.2	-	-	5.5
Treverbyn	31.0	42.2	26.2	30.1	-	-	19.5	22.9	-	-	16.7
Doublebois	-	-	-	-	-	-	29.7	20.0	-	-	12.5
Halfway	-	-	19.1	17.6	-	-	2.2	(P)	-	-	(P)
Newbridge	-	-	-	-	-	-	13.3	(P)	-	-	(P)
Glynn	-	-	38.9	-	-	-	-	(P)	-	-	(P)
Respryn Bridge	-	-	-	-	-	-	24.8	(P)	-	-	(P)
Respryn	-	-	19.7	-	-	-	-	-	-	-	-
Restormel	-	-	-	-	-	-	41.9	(P)	-	-	(P)
SIBLYBACK STM.											
U/S Siblyback Lake	-	-	-	-	-	-	-	0.0	-	-	0.0
D/S Siblyback Lake	-	-	-	-	-	-	-	0.0	-	-	2.6
TREMANT											
Hallsr	-	-	-	-	0.0	-	-	0.0	-	-	0.0
Downs Ford	-	-	-	-	0.0	-	0.0	0.0	-	-	0.0
North Wood	-	-	-	-	0.0	-	-	0.0	-	-	0.0
Carpenn	-	-	-	-	0.0	-	0.0	0.0	-	-	0.0
Chapel	-	-	-	-	0.0	-	0.0	20.9	-	-	0.0
WARLEGGAN											
Temple	-	-	-	-	-	-	0.0	35.9	-	0	0.0
u/s Maddaford	-	-	-	-	-	-	3.3	14.5	-	0	0.0
Woods Bridge	-	-	-	-	-	-	17.4	0.9	-	26	0.0
Carne Wood	-	-	-	-	-	-	75.5	28.3	-	106.9	0.0
Pasters Bridge	33.6	51.0	62.2	-	-	-	89.3	29.4	-	58.9	1.6
Warleggan G.B.	-	-	-	-	-	-	18.6	13.4	-	54.5	13.0
West Wood	35.0	47.5	84.8	-	-	-	45.0	22.8	-	16.6	5.7
Warleggan Trib.	-	-	-	-	-	-	0.0	20.5	-	-	0.0
CARDINHAM											
Millpool Bridge	-	-	-	-	-	0.0	0.0	0.0	-	-	0.9
Pench Bridge	-	-	-	-	-	10.7	41.6	45.7	-	-	4.6
Millpool Stm.	-	-	-	-	-	15.7	-	-	-	-	-
Woodford	-	-	-	-	-	22.1	27.0	55.0	-	-	9.3
Margate Ford	19.0	79.4	38.1	64.3	-	29.6	46.1	36.1	-	-	9.9
Margate Bridge	-	-	-	-	-	33.2	-	-	-	-	-
Thurbere Bridge	-	-	-	-	-	-	29.6	17.6	-	-	3.5
Cardinham	-	-	35.3	62.3	-	35.9	14.3	4.8	-	-	3.5
Church Bridge	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0
Callabarrett	-	-	-	-	-	29.0	47.7	25.1	-	-	2.1

RIVER/Site	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1991	1994	1997
ST NEOT														
Stuffle 1.	-	-	-	0.0	-	-	-	-	-	-	-	-	-	
Stuffle 2.	-	-	-	0.0	-	-	-	-	-	-	-	-	-	
Stuffle 3.	-	-	-	0.0	-	-	-	-	-	-	-	-	-	
Colliford Fall	-	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Great Hammett	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trevenna Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	
St Neot	4.1	19.4	4.6	3.4	4.5	1.2	27.4	0.0	0.0	1.0	5.4	0.3	0.0	0.0
Mill House	-	-	-	-	3.4	6.4	41.0	0.0	0.0	5.4	6.7	6.0	0.0	0.0
Lampen	-	-	-	-	0.0	21.3	24.9	0.4	6.9	21.6	22.2	1.0	1.7	0.0
Caraglaze	-	-	-	-	-	-	-	-	-	-	-	5.9	0.9	0.0
Pengelly	101.7	49.1	43.0	27.0	36.0	67.4	93.3	21.3	2.0	7.9	18.4	7.0	24.9	9.2
Pengelly Bridge	-	-	-	-	21.3	33.3	60.7	27.3	5.2	21.3	25.4	16.9	15.6	15.9
LERRYN														
Boconnoc	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0
Couche Mill	-	-	-	-	-	-	-	-	-	-	-	0.0	9.1	9.4
Lerryn	-	-	-	-	-	-	-	-	-	-	-	2.0	0.0	7.3

KEY
Densities are given in numbers of fish per 100 square metres.
(P) = Present (Dip Survey results

Table (2).

Historical Salmon Parr (> =1+) Electric-fishing population densities for the Fowey catchment

RIVER / Site	1977	1978	1979	1980	1982	1983	1991	1996	1998	1999	1997
FOWEY											
Lostwithiel	-	0.0	0.0	0.0	-	-	-	0.0	-	-	0.0
Coddis	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Pelmorsbridge	3.3	0.0	0.0	0.0	-	-	0.0	1.3	-	-	1.0
Trezibbett	0.8	0.4	0.0	1.1	-	-	0.4	0.9	-	-	1.4
Harrowbridge	-	-	-	-	-	-	-	3.6	8.7	0.3	1.1
Lower Langdon	2.5	0.9	0.0	0.0	-	-	0.3	0.8	3.3	-	0.7
Lanreigate	-	-	-	-	-	-	1.8	0.8	3.1	1	2.6
Draynes Bridge	-	-	-	-	-	-	4.0	7.5	-	-	5.1
Trengale Wood	6.9	-	-	-	-	-	10.3	4.9	-	-	6.6
Treverbyn	12.6	14.9	13.3	11.4	-	-	11.3	8.0	-	-	10.7
Doublebois	-	-	-	-	-	-	3.8	3.4	-	-	5.2
Halfway	-	-	10.4	7.5	-	-	2.5	(?)	-	-	(?)
Newbridge	-	-	-	-	-	-	4.0	(?)	-	-	(?)
Glynn	-	-	16.1	-	-	-	-	(?)	-	-	(?)
Restpryn Bridge	-	-	-	-	-	-	6.0	(?)	-	-	(?)
Restpryn	-	-	3.3	-	-	-	-	-	-	-	-
Restormel	-	-	-	-	-	-	5.3	(?)	-	-	(?)
SIBLYBACK STW.											
U/S Sibleyback Lake	-	-	-	-	-	-	-	0.0	-	-	0.0
D/S Sibleyback Lake	-	-	-	-	-	-	-	1.4	-	-	2.3
TREWANT											
Halter	-	-	-	-	0.0	-	-	0.0	-	-	0.0
Downs Ford	-	-	-	-	0.0	-	0.0	0.0	-	-	0.0
North Wood	-	-	-	-	0.0	-	-	0.0	-	-	0.0
Carpalan	-	-	-	-	0.0	-	0.0	0.0	-	-	0.0
Chapel	-	-	-	-	1.0	-	7.8	4.3	-	-	10.2
WARLEGGAN											
Temple	-	-	-	-	-	-	4.4	4.6	-	11.4	0.9
u/s Maddernwell	-	-	-	-	-	-	8.8	6.1	-	2.9	6.8
Woods Bridge	-	-	-	-	-	-	16.3	8.9	-	6.6	14.3
Carne Wood	-	-	-	-	-	-	36.1	23.6	-	15.8	24.6
Pardars Bridge	14.0	19.3	18.4	-	-	-	27.0	24.1	-	22.2	17.0
Warleggan G.S.	-	-	-	-	-	-	15.1	10.1	-	14.1	10.9
West Wood	14.9	9.2	12.7	-	-	-	19.0	7.5	-	11	9.5
Warleggan Trib.	-	-	-	-	-	-	29.3	1.5	-	-	29.3
CARDINHAM											
Millpool Bridge	-	-	-	-	-	0.9	20.8	3.4	-	-	0.9
Peach Bridge	-	-	-	-	-	6.1	12.6	3.3	-	-	0.6
Millpool Stn.	-	-	-	-	-	16.8	-	-	-	-	-
Woodford	-	-	-	-	-	18.0	11.8	9.2	-	-	6.4
Margate Ford	13.7	14.7	21.8	11.1	-	13.8	12.9	11.6	-	-	12.4
Margate Bridge	-	-	-	-	-	8.8	-	-	-	-	-
Fletchers Bridge	-	-	-	-	-	-	16.1	7.9	-	-	4.7
Cardinham	-	-	17.9	14.8	-	4.8	10.6	10.3	-	-	3.3
Church Bridge	-	-	-	-	-	1.3	1.4	6.9	-	-	6.8
Callaborrod	-	-	-	-	-	12.4	8.6	8.3	-	-	1.9

RIVER/Site	1977	1979	1979	1980	1981	1982	1983	1984	1985	1986	1987	1991	1994	1997
ST NEOT														
Staffle 1.	-	-	-	0.0	-	-	-	-	-	-	-	-	-	
Staffle 2.	-	-	-	0.0	-	-	-	-	-	-	-	-	-	
Staffle 3.	-	-	-	0.0	-	-	-	-	-	-	-	-	-	
Cotliford Fall	-	0.6	0.6	-	-	-	4.2	0.0	0.0	0.6	0.0	0.5	0.4	1.3
Great Hamnett	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trevenna Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	
St Neot	0.5	3.1	4.1	1.0	0.5	1.2	0.8	0.6	1.0	0.5	0.6	0.3	0.0	0.4
Mill House	-	-	-	-	2.4	2.6	2.5	10.1	2.7	0.6	2.3	1.3	0.3	2.4
Lampen	-	-	-	-	8.7	3.9	7.4	8.7	0.4	3.8	6.9	1.4	0.8	0.5
Carnglaze	-	-	-	-	-	-	-	-	-	-	-	4.0	0.0	1.1
Pengelly	6.9	6.5	6.6	5.5	11.0	7.1	4.2	9.4	4.4	1.4	4.9	2.5	2.3	1.7
Pengelly Bridge	-	-	-	-	10.6	8.9	4.0	10.9	7.1	7.6	8.1	3.4	3.0	3.0
LERRYN														
Boconnoc	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0
Couchs Mill	-	-	-	-	-	-	-	-	-	-	-	4.3	6.1	4.1
Lerryn	-	-	-	-	-	-	-	-	-	-	-	4.6	2.9	2.3
-	-	-	-	-	-	-	-	-	-	-	-			

Table (3).

Historical Trout fry (0+) Electric-fishing population densities for the Fowey catchment

RIVER / Site	1977	1978	1979	1980	1982	1983	1991	1994	1995	1996	1997
FOWEY											
Lankerwick	-	30.0	73.5	26.3	-	-	-	28.0	-	-	56.1
Cadda	-	-	-	-	-	-	32.2	15.2	-	-	19.0
Palmersbridge	32.9	53.0	33.9	32.0	-	-	25.9	32.0	-	-	8.0
Trenibbott	30.3	31.7	25.3	14.4	-	-	5.0	3.4	-	-	12.4
Harrowbridge	-	-	-	-	-	-	-	5.6	9.9	12.7	13.0
Lower Langdon	15.3	18.6	24.4	24.3	-	-	5.4	7.0	14.3	-	19.9
Lanreigan	-	-	-	-	-	-	5.4	3.3	2.3	3.4	7.6
Draynes Bridge	-	-	-	-	-	-	8.1	9.4	-	-	4.5
Trengale Wood	3.3	-	-	-	-	-	3.3	6.1	-	-	8.6
Trevorbyn	17.3	21.3	12.7	12.9	-	-	8.0	9.4	-	-	6.2
Doubleboats	-	-	-	-	-	-	9.2	8.1	-	-	5.8
Halfway	-	-	6.4	6.1	-	-	2.6	(3)	-	-	P
Newbridge	-	-	-	-	-	-	5.6	(3)	-	-	P
Glynn	-	-	12.7	-	-	-	-	(3)	-	-	P
Respryn Bridge	-	-	-	-	-	-	2.7	(3)	-	-	P
Respryn	-	-	6.9	-	-	-	-	-	-	-	-
Restormel	-	-	-	-	-	-	6.2	(3)	-	-	P
SIBLYBACK STW.											
U/S Sibdyback Lake	-	-	-	-	-	-	-	17.1	-	-	17
D/S Sibdyback Lake	-	-	-	-	-	-	-	26.8	-	-	6.7
TRENANT											
Hallaer	-	-	-	-	204.7	-	-	137.0	-	-	124.2
Dunraw Ford	-	-	-	-	98.1	-	17.3	68.5	-	-	58.3
North Wood	-	-	-	-	84.6	-	-	69.2	-	-	38.6
Carpenn	-	-	-	-	152.9	-	37.2	8.7	-	-	46.4
Chapel	-	-	-	-	77.3	-	46.2	9.8	-	-	58
WARLEGGAN											
Temple	-	-	-	-	-	-	47.6	42.3	-	68.8	27.7
u/s Maidenwell	-	-	-	-	-	-	57.6	93.9	-	72.2	44
Woods Bridge	-	-	-	-	-	-	8.8	8.9	-	37	40
Carne Wood	-	5	-	-	-	-	12.3	21.1	-	34.3	44.9
Pastors Bridge	26.9	19.6	56.4	-	-	-	25.4	19.3	-	38.9	31.1
Warleggan G.S.	-	-	-	-	-	-	5.4	11.8	-	23	14.2
West Wood	44.2	27.5	31.6	-	-	-	12.7	11.4	-	22.1	7.6
Warleggan Trib.	-	-	-	-	-	-	17.9	24.8	-	-	53.9
CARDINHAM											
Millpool Bridge	-	-	-	-	-	76.6	93.8	92.5	-	-	63.7
Punch Bridge	-	-	-	-	-	44.9	39.8	42.4	-	-	16.4
Millpool Stm.	-	-	-	-	-	32.3	-	-	-	-	-
Woodford	-	-	-	-	-	33.9	19.8	33.4	-	-	37.2
Margate Ford	33.5	38.4	53.8	26.6	-	22.1	23.9	14.7	-	-	26.9
Margate Bridge	-	-	-	-	-	23.8	-	-	-	-	-
Fletchers Bridge	-	-	-	-	-	-	13.8	16.6	-	-	19.8
Cardinham	-	-	31.6	18.7	-	18.5	5.3	6.1	-	-	12.9
Church Bridge	-	-	-	-	-	91.3	66.3	35.4	-	-	57.4
Callaborrett	-	-	-	-	-	54.1	46.3	58.3	-	-	53.1

RIVER/Site	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1991	1994	1997
ST NEOT														
Snuffle 1.	44.3	53.5	22.3	26.2	-	-	-	-	-	-	-	-	-	-
Snuffle 2.	42.5	58.5	73.4	30.7	-	-	-	-	-	-	-	-	-	-
Snuffle 3.	63.1	86.9	73.9	45.2	-	-	-	-	-	-	-	-	-	-
Coldford Fall	26.6	20.2	28.7	-	-	-	20.9	25.1	18.4	6.8	2.5	1.0	4.7	4
Great Hammett	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trevenna Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St Neot	38.0	35.2	28.7	14.6	23.8	48.6	51.3	62.9	28.8	25.8	18.8	9.6	15.6	19.3
Mill House	-	-	-	-	13.8	52.7	58.2	64.5	47.7	19.3	7.0	25.1	21.8	26
Langon	-	-	-	-	18.6	39.2	36.6	42.8	41.1	19.9	15.1	9.5	5.0	10.7
Carnglaze	-	-	-	-	-	-	-	-	-	-	-	26.0	9.3	15.9
Pengelly	47.8	28.9	34.6	22.7	17.2	51.1	39.8	37.6	19.5	22.8	8.5	11.4	16.6	16.9
Pengelly Bridge	-	-	-	-	12.7	42.6	25.8	23.7	24.2	16.6	11.9	22.6	8.6	22.8
LERRYN														
Boconnoc	-	-	-	-	-	-	-	-	-	-	-	5.8	4.8	25.8
Couche Mill	-	-	-	-	-	-	-	-	-	-	-	29.6	9.9	13.1
Lerryn	-	-	-	-	-	-	-	-	-	-	-	4.2	8.7	4.4

Table (4)

Historical Trout parr (> 1+) Electric-fishing population densities for the Fowey catchment

RIVER/Site	1977	1978	1979	1980	1982	1983	1991	1994	1995	1996	1997
FOWEY											
Lostwithiel	-	23.6	41.0	45.7	-	-	-	48.7	-	-	39.2
Cuddra	-	-	-	-	-	-	17.5	17.7	-	-	8.1
Palmersbridge	24.7	36.3	36.6	34.7	-	-	30.0	28.4	-	-	13.5
Trenibbert	9.4	16.2	20.0	19.0	-	-	7.6	6.0	-	-	10.2
Herrowbridge	-	-	-	-	-	-	-	11.5	19.2	8.4	18.4
Lower Langdon	22.5	30.9	28.1	28.8	-	-	12.1	11.2	17.9	-	8.6
Lanelgate	-	-	-	-	-	-	12.5	8.5	18	11.9	11.5
Draynes Bridge	-	-	-	-	-	-	10.4	9.9	-	-	10.9
Trenguis Wood	3.7	-	-	-	-	-	10.6	15.4	-	-	11.4
Treverbyn	10.6	18.3	18.8	16.6	-	-	11.7	12.1	-	-	12.9
Doublebois	-	-	-	-	-	-	9.4	5.6	-	-	3
Halfway	-	-	9.3	10.5	-	-	6.9	(P)	-	-	P
Newbridge	-	-	-	-	-	-	9.6	(P)	-	-	P
Glynn	-	-	9.6	-	-	-	-	(P)	-	-	P
Respryn Bridge	-	-	-	-	-	-	7.1	(P)	-	-	P
Respryn	-	-	4.7	-	-	-	-	-	-	-	-
Restormel	-	-	-	-	-	-	4.8	(P)	-	-	P
SIBLYBACK STM.											
U/S Siblyback Lake	-	-	-	-	-	-	-	37.7	-	-	29.3
D/s Siblyback Lake	-	-	-	-	-	-	-	22.1	-	-	9.4
TRENANT											
Stuller	-	-	-	-	6.6	-	-	11.3	-	-	11.4
Downs Ford	-	-	-	-	5.7	-	1.9	20.1	-	-	12
North Wood	-	-	-	-	32.3	-	-	16.9	-	-	13.3
Carpenn	-	-	-	-	46.9	-	22.8	22.9	-	-	46.1
Chapel	-	-	-	-	47.9	-	31.2	15.5	-	-	24.4
WARLEGGAN											
Temple	-	-	-	-	-	-	14.6	26.4	-	25.1	33.1
u/s Middlewell	-	-	-	-	-	-	12.8	27.9	-	28.4	31.3
Woods Bridge	-	-	-	-	-	-	18.5	12.8	-	11	15.3
Curse Wood	-	-	-	-	-	-	24.2	22.9	-	18.5	26.6
Pasters Bridge	35.9	28.0	26.9	-	-	-	22.9	22.4	-	21.7	21.7
Warleggan G.S.	-	-	-	-	-	-	34.7	19.3	-	21.8	18.5
West Wood	14.2	16.0	13.4	-	-	-	16.8	16.9	-	16.9	23.6
Warleggan Trib.	-	-	-	-	-	-	28.6	26.6	-	-	38.1
CARDINHAM											
Millpool Bridge	-	-	-	-	-	44.0	30.8	42.6	-	-	49.3
Perch Bridge	-	-	-	-	-	29.1	16.8	42.9	-	-	31.2
Millpool Site	-	-	-	-	-	27.2	-	-	-	-	-
Woodford	-	-	-	-	-	46.7	28.3	42.7	-	-	31.4
Margate Ford	34.7	48.7	34.3	35.3	-	45.8	28.4	35.2	-	-	28.4
Margate Bridge	-	-	-	-	-	23.9	-	-	-	-	-
Fletchers Bridge	-	-	-	-	-	-	18.4	31.2	-	-	22.9
Cardinham	-	-	29.4	32.8	-	34.8	21.1	29.7	-	-	28.8
Church Bridge	-	-	-	-	-	45.8	34.9	29.5	-	-	44.8
Callenterett	-	-	-	-	-	26.6	16.4	15.4	-	-	17.1

KEY

Densities are given in numbers of fish per 100 square metres.

(P) = Present (Dip Survey results)

RIVER/Site	1977 TROUT >=1+	1978 TROUT >=1+	1979 TROUT >=1+	1980 TROUT >=1+	1981 TROUT >=1+	1982 TROUT >=1+	1983 TROUT >=1+	1984 TROUT >=1+	1985 TROUT >=1+	1986 TROUT >=1+	1987 TROUT >=1+	1991 TROUT >=1+	1994 TROUT >=1+	1997 TROUT >=1+
ST NEOT														
Stuffe 1.	10.6	43.4	35.3	34.6	-	-	-	-	-	-	-	-	-	
Stuffe 2.	11.4	31.3	42.3	29.7	-	-	-	-	-	-	-	-	-	
Stuffe 3.	16.5	26.6	30.5	32.4	-	-	-	-	-	-	-	-	-	
Colliford Fall	22.9	41.2	35.3	-	-	-	22.1	26.4	16.4	21.5	15.1	6.5	4.3	9.9
Great Hammett	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trevenna Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	
St Neot	8.3	14.9	12.7	7.4	15.3	25.4	27.4	22.9	18.4	18.2	13.0	7.3	17.0	10
Mill House	-	-	-	-	15.6	14.8	24.7	20.2	15.3	14.8	13.9	7.3	18.6	7.1
Langore	-	-	-	-	23.4	24.6	27.6	26.9	24.9	25.1	24.7	8.1	9.6	16.1
Coraglene	-	-	-	-	-	-	-	-	-	-	-	6.5	8.8	6.2
Pengelly	14.3	23.8	16.7	14.7	17.6	15.9	22.3	16.3	21.5	18.6	12.6	11.6	5.5	17.6
Pengelly Bridge	-	-	-	-	20.3	17.3	17.8	13.4	11.1	9.3	16.9	8.3	3.3	13.9
LERRYN														
Becamor	-	-	-	-	-	-	-	-	-	-	-	24.1	28.4	14.1
Couche Mill	-	-	-	-	-	-	-	-	-	-	-	19.1	27.3	12.3
Lerryn	-	-	-	-	-	-	-	-	-	-	-	25.8	26.4	8.9