



SECTION 3: THE FISHES OF THE TWEED AND THE EYE

C.6: **Roach** *Rutilus*

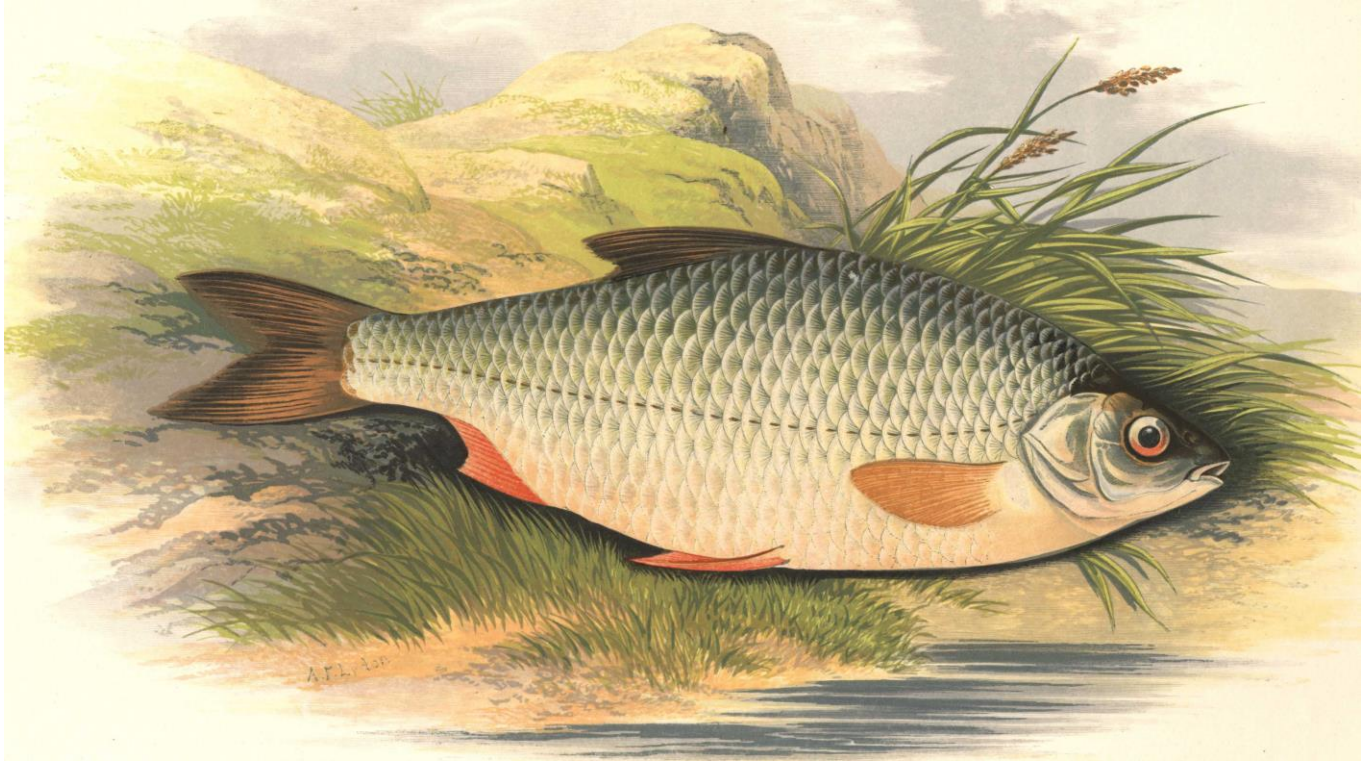


Photo C.6.1: *The Roach: Taken from British Freshwater Fishes by the Rev. W. Houghton, illustrated by A.F. Lydon, 1879*

The Roach is a member of the Carp family, the largest fish Family in the world with some 2,000 species. Found in every part of the planet other than South America and Australasia, they are all freshwater species, though a few, such as the Roach, are able to tolerate mildly brackish water. The Carp family lack teeth on the jaws, instead grinding up their food with special, toothed, bones in their throats and have a highly developed sense of smell. There are 80 Carp species in Europe, 16 of which can be found in the British Isles.

Adult Roach average 20 to 25cms in length and 200-300gms in weight, and are deep-bodied and rather flattened. They feed on the bottom, generally by swallowing mud, which they then process in their exceptionally long intestines, which are around 15 times the length of the fish. Their specially adapted mouths can dig up to 5cms into sediments for feeding. The upper head and back are dark olive-green/brown, the belly is pale white; the tail and dorsal fins are brownish while the other fins are variable shades of red.

Roach are naturally distributed through continental Europe and northern Asia, as far as Siberia, forming several distinct sub-species over this very wide range. In the British Isles it is native to southern England, though has been spread very widely by humans, often as live bait used for Pike fishing and is even deliberately introduced for angling. It is tolerant of warmer water, up to a maximum of 38°C, and of a mild degree of pollution and can live in a wide range of environments, from large lochs, such as Loch Lomond (where the population, long the only one in Scotland, may be natural) to lowland rivers and ponds and canals.

Spawning takes place from April to June, when water temperatures rise above 12°C, during which the sticky eggs are released into weed beds: a large female can produce 200,000 of these. Hatching takes only 5 to 10 days, depending on water temperature, though the newly hatched fry remain clinging to the weed for a few



days until their yolk sacs are absorbed. Typically, Roach fry are 60 to 90mm in length by the end of their first year and 90 to 120mm by the end of their second. Further growth is very variable, depending on local conditions and population size; "stunted" populations, where 150mm or so is the maximum size reached due to the pressure of numbers on food resources, are characteristic of this species. Roach often live for 10-12 years, with females growing faster and living longer than males.

Young Roach feed first on microscopic animals and plants such as rotifers and crustacean larvae and single-celled algae, then move on to larger, bottom-living animals such as worms, snails and insect larvae. They also feed on plant detritus, filamentous algae and aquatic plants and will even rise to insects on the surface.

Roach on Tweed: This species was introduced for use as bait: "*On 12th December 1889 the late Mr. George Grey informed me that, for a good many years previously, he had kept Roach in a pond at Milfield, for the purpose of keeping himself supplied with fresh bait for winter Pike-fishing. They had bred freely in the pond and increased rapidly and there was no obstruction to the descent of small ones to the Till at any time.*" (Bolam 1919). The other early records reported by this author are:

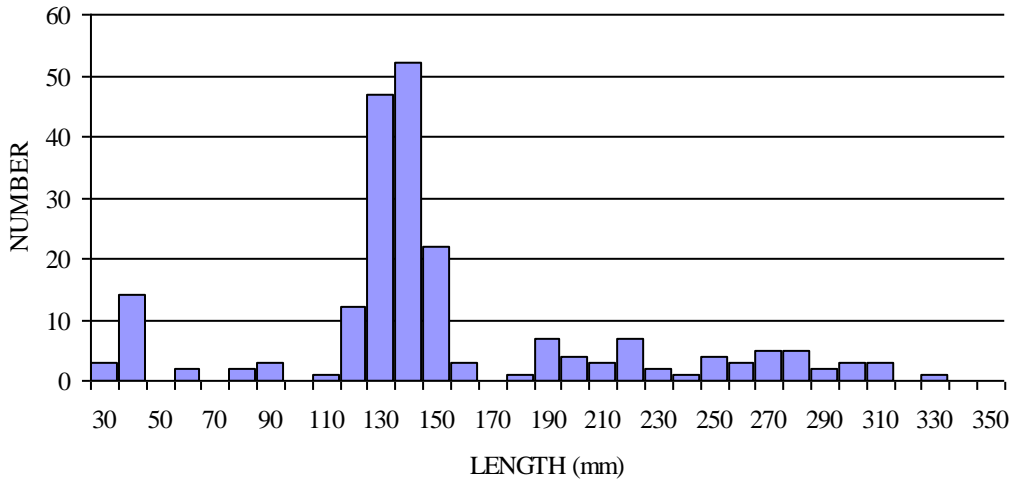
- 1898 "Another alien on the Borders, where it was wholly unknown till about 1898, when quite small ones began to appear amongst minnows in the Tweed at Twizel"
- 1898 "Common on the lower Till since around 1898"
- 1903 Half pound size ones in the Salmon nets at Twizel, on the Till
- 1903 Caught on worm at Hornecliffe
- 1906 First taken by anglers around Wooler
- 1910 The first Roach caught on the Teviot were 3 taken by an angler near the Junction with the Tweed in September (*The Field*, 24th September 1910)
- 1912 Over 20 stones (280 lbs) taken in one haul of the net at Twizel
- 1913 Netting by RTC bailiffs to destroy coarse fish destroyed 1436 Roach from 7th April to 9th August, all except 2 being caught from Cornhill downwards - the exceptions being small fish taken at Monteviot and Roxburgh Castle on the Teviot

There is also another report of unused Roach live-bait being released into the river at Tillmouth by a Salmon angler who used them as fresh spinning lures (Brennan, 1968). At one time, Roach reached considerable numbers in the lower Tweed, and in the 1970's were netted by the River Tweed Commission's Water Bailiffs for angling clubs from the Merseyside area who took them away to stock their club waters. In more recent years, however, they have become much less abundant. The gradual cleaning up of the river and more frequent and higher spates are probably responsible for this decline.

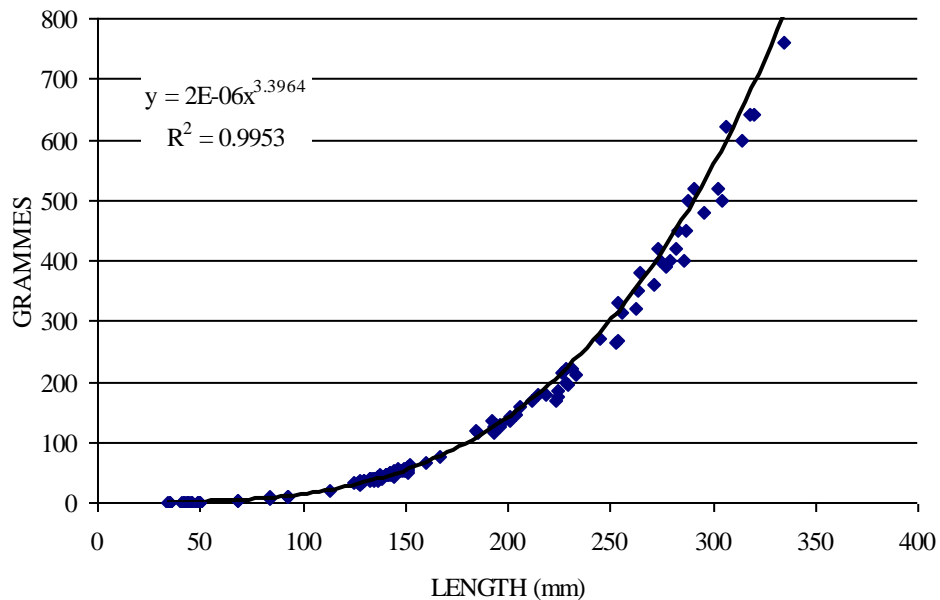
Sizes of Roach on Tweed: Clout (1972) netted a sample of 212 Roach at the Canny Netting Station, Norham, in early November 1971, the lengths of which are shown in Graph C.6.1: Fish of 130 to 150mm dominated this catch. Some fry, the "Young of the Year" were caught in the 10mm mesh sized seine net used as well as a few large fish of around 300mm. In terms of weight, as shown by Graph C.6.2, these abundant small Roach of 130 to 150mm averaged around 50gms, with the largest fish of 300mm or so weighing 750gms or so.



ROACH : Lengths of a sample taken at Norham, November 1972

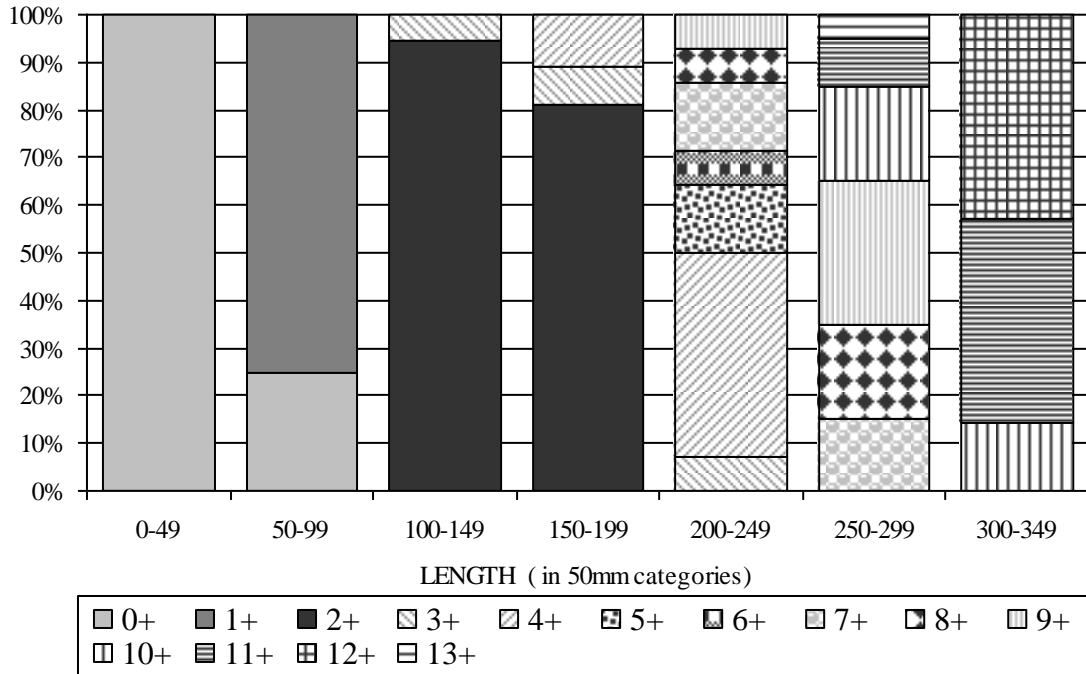


Graph C.6.1: Lengths of a sample of 212 Roach netted in November 1971 at Norham

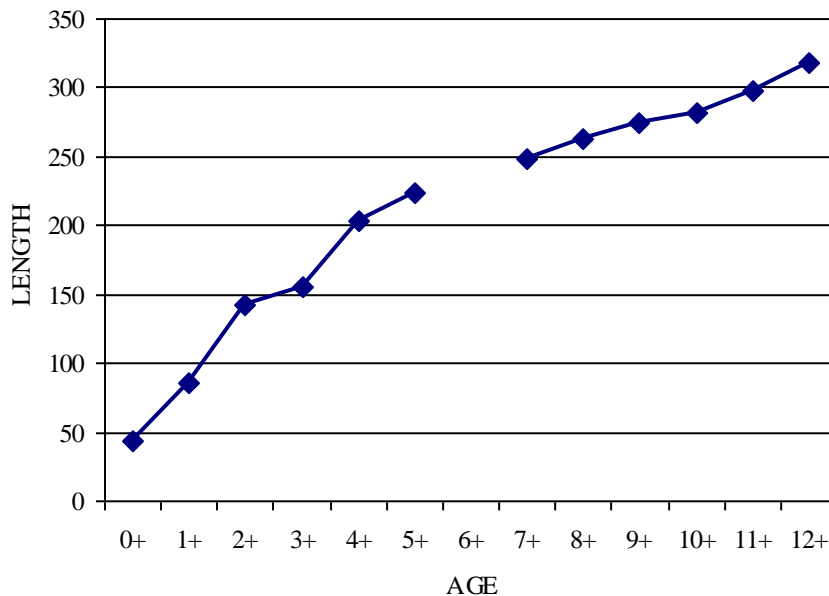


Graph C.6.2: Length-weight relationships in a sample of 212 Roach netted in November 1971 at Norham

Ages of Roach on Tweed: Graph C.6.3 shows that while the smaller sizes taken in the 1971 sample from Norham are made up of just three age groups, the “medium sized” fish of 200 to 300mm are made up of 10 different ages, from two years old to thirteen. This is because their growth slowed down after the first three years (Graph C.6.4) so that individual variation produced a mix of fish of the same size at different ages.



Graph C.6.3: Age structure in a sample of 212 Roach netted in November 1971 at Norham



Graph C.6.4: Average age. Average length relationships in a sample of 212 Roach netted in November 1971 at Norham

The Diet of Roach on Tweed: This was first examined by Radforth (1940) who looked at the gut contents of 50 Roach taken from the Tweed in September and 50 from the Till in May, but could see nothing but masses of plant and algae cells. Starkie (1975) was able to assign some relative values to the food items eaten using a

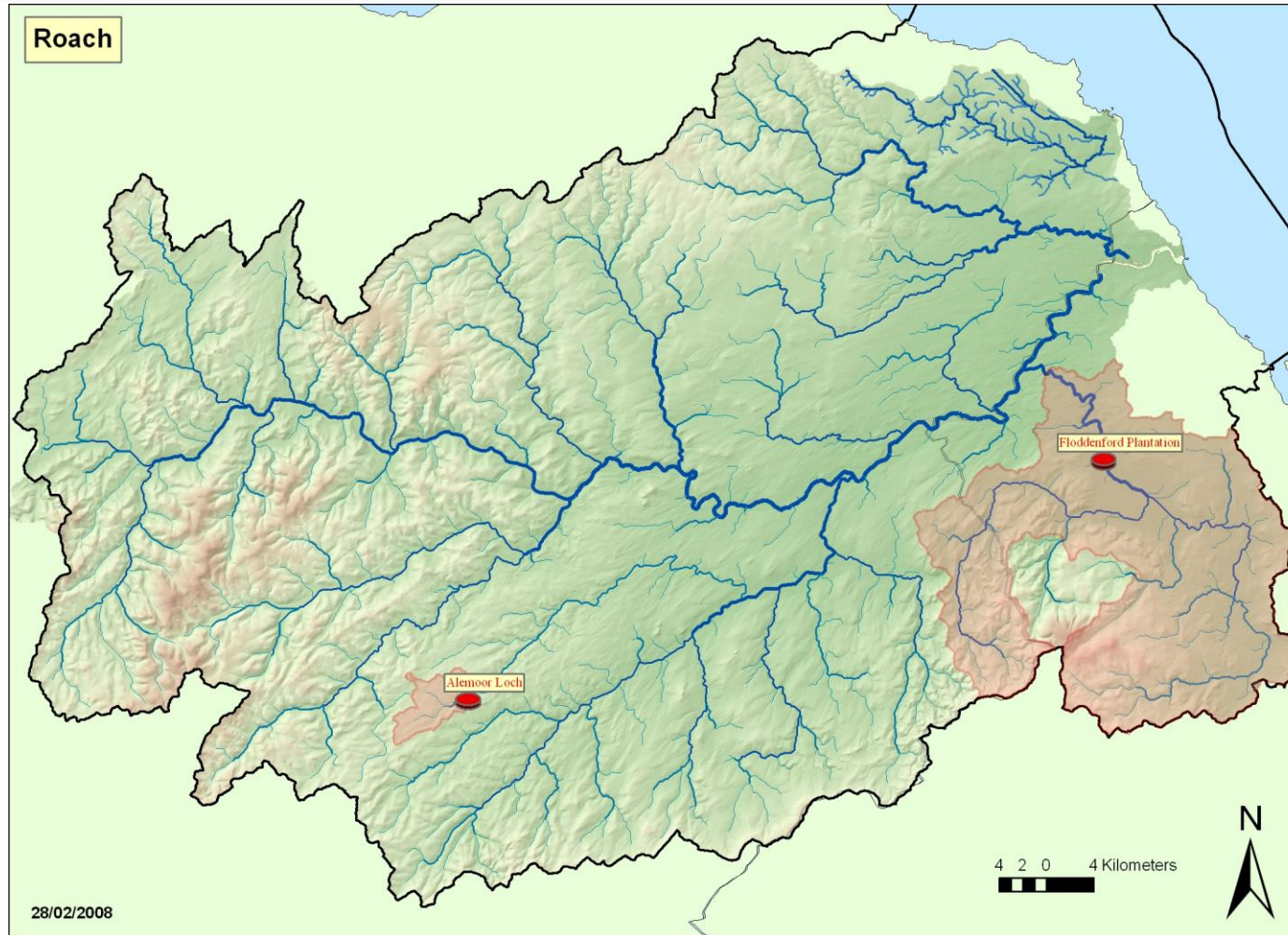


points scoring system, the results of which are shown in Table C.6.5, from which it can be seen that microscopic plants (diatom algae, etc.) dominate the diet, with Oligochaet worms (small worms that live in mud), planktonic crustacea (Daphnia, Copepods, etc.), molluscs, midge larvae and pupae also being of importance.

| Bottom Living Animals | % Diet |
|---------------------------------|--------|
| Molluscs | 9.30% |
| Worms | 15.40% |
| Leeches | 0.10% |
| Midge larvae | 7.40% |
| Other Insect larvae | 2.90% |
| Mid-water Living Animals | |
| Water Boatmen | 1.10% |
| Adult Water-beetles | 0.70% |
| Planktonic Crustacea | 12.60% |
| Midge pupae | 2.20% |
| Other Insect Pupae | 0.10% |
| Surface Animals | |
| Adult Flying Insects | 0.80% |
| Plant Material | |
| Microscopic | 44.40% |
| Macroscopic (Weeds) | 1.80% |

Table C.6.5: The diet of Roach on the Tweed

Roach as prey on Tweed: Roach are a popular prey of fish-eating birds. A 1972-73 study of the stomach contents of 26 Cormorants shot on the lower Tweed found 43 Roach amongst the 137 individual fish of all sizes that had been eaten, including one of just 3.6cms in length (MacIntosh, 1978).



Map C.6.1: Known distribution of Roach in still waters within the District