Notes on field trials of new Easylec control boxes

Jan 2009

The first trial of the prototype box was carried out on a stretch of the River Ouse close to the Environment Agency Brampton office with help from Terry Clough and Paul Wilkanowski. The cold early January conditions were not ideal for electric fishing but it was felt to be worthwhile doing the test in case it demonstrated any major flaws with the control box. Water temperature was 3.5^{o}C and ambient conductivity was 560µS. The electrodes used were anodes with 30cm rings and 3m braided cathodes. A Honda EU 20i generator was used. The stretch was fished from a boat .

Voltage (V)	Frequency (Hz)	Duty cycle %	No anodes	No cathodes	Current A	Comments
150	40	20	1	1	5	Catching eels and fish including small individuals
150	40	20	2	1	7 - 8	Catching eels and fish including small individuals
250	40	20	2	1	8-9	Continued to catch but current overload warning was triggered
200	40	20	2	1	8-9	Slightly lower current than at 250V
200	40	20	2	2	>9	At power limit so need to reduce V
180	40	20	2	2	**	Within power limit
150	40	20	2	2	9	Catching eels and fish including small individuals
150	30	5	2	2	5	Catching eels and fish including small individuals
100	30	5	2	2	7	Catch efficiency reduced
100	50	100	2	2	9	Noticeable strain on generator
150	100	20	2	2	**	turned one small (5cm) fish ? 0+ ruffe, stoneloach or bullhead
150	30	5	2	2		**Anode and cathode brought into contact (deliberately!). Alarm and overload error message. Box was reset and continued to fish with no noticeable effect from the overload.**

** current not recorded in field notes

The number of fish seen and caught was small but this was to be expected given the conditions. Species caught were chub, perch, pike and eels including small individuals of all species. The fish which were retained appeared to recover well.

21st May

Trial carried out on River Salwarpe in Droitwich which has high conductivity. Anna Elkin and Pete Smith (Midlands West area) helped with the trial. Conductivity on the day 1960 to 1990 µS, water temperature 14.6°C. Ambient conductivity would be 1547 – 1571 µS. A Honda EU 20i generator was used.

Prototype box fished with single anode, 40cm ring and single 3m cathode

Voltage (V)	Frequency (Hz)	Duty cycle %	Current A	Comments
100	30	20	8.2 – 10.1	When output equalled or exceeded 10A current overload warning was triggered but carried on fishing. One instance of anode switch fault but this was OK when box was reset and fishing resumed. Catching large and small fish including a small eel. One large chub took a hit and bled from gill area briefly. Appeared to recover quickly. Not catching small bullheads very well.
100	30	10	7 – 8.8A	Catching chub of various sizes. One chub with bleeding from below gill, appeared to recover quickly. Turning bullheads, recovering rapidly.
100	30	5	5.5 – 8A	Catching.
100	30	1		Catching.

Production box fished with single anode, 40cm anode ring and single 3m cathode

Voltage (V)	Frequency (Hz)	Duty cycle %	Current A	Comments
100	30	1	6.5 to 7.2	Not catching but lots of chub and dace seen even very close to the anode.
100	30	2	6.5 – 7	Not catching well, though some fish stunned if they came very close to the anode (< 50 cm), but generally useless in open water.
100	30	5	6.5 – 9	Catching bullheads and chub.

All fish appeared to recover quickly. The generator was not straining at all during fishing.

28th May 2009

Catch depletion survey carried out using production control box on Black Brook (Ribble catchment).

Fished using 2 anodes with 35 cm rings and a double cathode 2m. Conductivity was approximately 200µS.

This stretch of river is fished twice a year, in the past Intelysis boxes have been used allowing best practice guidance to be followed.

Voltage (V)	Frequency (Hz)	Duty cycle %	Current A	Comments
120	20	30		Some fish affected but not catching.
140	30	40	1.5 to 2.2A	Trout (including fry 35-40mm), bullheads and chub all caught . At these settings fish were attracted to the anode and easily netted, all recovered as soon as they were out of the water.

Catch depletion was good.

There were several instances of anode switch error alarms, this seems to be very sensitive to variation in pressure on the anode switch. Resetting was quick and the efficiency of the run did not appear to be affected.

The prototype control box was tried using the same settings in a different stream. Single anode with 35cm ring and a 2m single cathode. Conductivity was 180µS.

Voltage (V)	Frequency (Hz)	Duty cycle %	Current A	Comments
120	20	30		Not catching
140	30	40		Not catching
160	30	50		Fish affected but not catching.
200	40	50	1.8A	Catching trout effectively

Higher voltage, frequency and duty cycle needed to catch than with the depletion survey but the two are not directly comparable as conductivity lower in the second example and a single anode and cathode were used.