Experience of previous contractor summary of eradication and control options

Here's a brief description of main options:

1) Traps. We tried the large trap option which was a total failure. Smaller 'box' type traps and fyke (eel) nets can also be discounted as carp don't like to force into small spaces and the traps will also kill a large number of (increasingly rare) diving ducks, moorhens, coots, plus no doubt an otter of two and even perhaps a beaver.

2) Electrofishing. OK as far as it goes, but very inefficient. Works for us mainly as a 'driving tool' forcing carp either to run into shallow water/under the banks where we hand net them, or to panic into the trammel (tangle) nets (see below).

3) Netting.

Seine nets: These encircle fish and enable us to draw them back to the bank. Ok but not really an option in Little Sea due to the risk of bringing in a lot of ordnance and the significant amount of woody debris, peat 'litter' and general snags. Location becomes even more critical as a single sweep with a 200m seine net can take 1.5 plus hours. Note that seine netting is an 'active method' that can work on 'resting' fish.

Gill nets: These work by chasing fish to hit a sheet of suspended netting. The fish heads go through the net but not their bodies, catching them by the gills. Issues with gill netting including picking a mesh size and a significant risk of severe damage to the fishes gills which may be fatal. Carp learn quickly and know they are under threat almost as soon as we launch the boat. They have also 'learnt' to avoid the nets - we regularly see them swim parallel to them and jump them.

Trammel nets: Slightly different to gill nets, these rely on seperate sheets of monofilament netting with a smaller meshed one hanging next to larger meshed ones. Fish hit the smaller meshed net, pushing it through the larger meshed sheet which then 'pockets the fish'. Fairly easy to cut the fish out of the net and damage is generally much less than for gill nets. Note that the comments regarding fish 'learning' about gill nets apply equally to trammel nets. Both trammel nets and gill nets are 'active ' fishing methods that only work if fish move.

We generally deploy 400m of trammel net at a time covering a large area of the lake quite quickly. They can also be set fairly fast, giving fish less chance to move away.

With all of these methods of netting, it's important to locate fish and then to be able to set around them without disturbing them . The first part is easy on sunny, flat days (see the drone footage today) but harder when there is any chop on the water and light conditions are less favourable.

We did look at improving our success with netting and electrofishing by:

5) 'Baiting' areas of the lake before fishing. In theory it should work but as all anglers know it is not a guarantee of success; fish respond more strongly at times to weather conditions than artificial food.

7) User of side scaning sonar. This picked up fish but the problem of approaching them remained. If you had a decent spell of sunny, light winds and settled weather then the use of a drone might be helpful but it would need to be available on the day(s) of the netting

6) Use of sonar to chase and 'corale' fish into an area. I approached a commercial supplier of fishery sonar (generally used on HEP dams, water intakes etc to deter fish) but didn't get any positive feedback. If one of the research organisations/universities fancies a try at this then it seems one of the most possibly productive but untested options.

Other possible options considered :

7) Remove all spawning areas and deploy artificial spawning substrate. In theory it could work but other conservation imperatives make this impractical. We can't remove all emergent vegetation (breeding warblers cease to have nest sites) neither could we or should we remove all the submerged weed we are trying to encourage. We would also need to cut back all roots of trees fringing the lake that dip into the water We could certainly put in artificial spawning mats (kakabans) for fish to spawn on that could be subsequently removed complete with carp eggs. But the quantum we could manage in lake the size of Little Sea is achingly small. There are also issues of timing; we would have to remove them within 3 days of spawning activity (carp are repeat spawners often over several weeks) to ensure that the eggs did not hatch in situ negating all our efforts.

8) We installed an 'inscale' (lobster pot type funnel) into the mouth of the Northern Area1 with the aim of concentrating spawning carp into the bay and preventing them leaving, making catching them easier. Carps' reluctance to enter 'dark spaces' again intervened with the carp choosing not to enter the bay, and gathering instead in numbers outside it.

Predators:

9) We have also tried to encourage cormorants (artificial perches).

10) The idea of introducing perch and pike is very logical but its success is founded on the predator controling the prey density below an ecological tipping point. That may happen but seems unlikely; once carp are >1kg then the impact of perch will be zero and that of pike very limited. Interestingly we have observed carp voraciously consuming small fry (their own and/or rudd?) in the margins. The average size of rudd is low (<15cm) probably due to cormorant predation. Natural England’s concerns about small fish impacting on diving duck food may not therefore be realised. The classic research was in the London reservoirs (stocked rainbow trout and other species) and

Norfolk Broads (bream) had a competitive advantage over diving ducks with respect to the limited resource of Chironomids ('duck fly').