

# Forward Thinking

(Physics of anti deep hooking techniques, one to one ratio rigs and concepts)  
Future development on original theories.

By  
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It seems quite a few years, when I first wrote about using the SFR (Sunken Fixed Rig) rig combined with a reversed Withy Pool rig fishing worms in a article called the Resistance movement and its sequel (2002) the next thing to look at was developing this success with other baits.

And further diagrams and explanations of using hooking arrangements where also mentioned in another article "In search of my Redmire" in both these previous articles I talked about a variety of things covering rig presentations, using PVA bags on Dyson rigs and eel behaviour for that particular water. In this piece I looked at the beginnings of creating the same effect of hooking on a one to one ratio using dead baits sections preferably fish head a personal favourite over the tail, but didn't go into too much detail on how they worked in a technical article type format that I normally do and will try and keep this article under 14 pages!!!!

One major change this season has been my hook selection, over the winter I have been mainly perch fishing and pike fishing and have on the odd occasion been carping on my local water when the conditions haven't been right for other species. While carping I used the Korda range of Long-shank X in sizes 8 and started to look at them for the forth coming eel season, but had to step down in size for the use of the rigs to be fished for eels to a size 10 and later using ESP size 11.

Quite some years ago I remember myself and Jimmy talking on the Leeds/Liverpool about deep hooking and a hook for the job and we did look at small Mustad hooks from the fly fishing section (Remember this is in the day prior to the abundance of hook selection we have today) and incorporating a bend in them as with the bent hook rig from the "Savey" days in the carping world.

I have found over the years a particular formula or rules that have to be followed when using "resistance rigs for eels" for them to work effectively. And recently I have been looking at indicators which I have written about before: One thing I didn't do was measure the amount of pressure or force that it would take using two types of indicators at the time being to find the reasons why it has been a very effective method for me and may not have been so successful for others who may have experimented with some of the things I have written about in the past.

So before going into the rigs, thoughts and theories I feel this is a good place to start because with out looking at the indicators (Drop backs) then using these rigs will not work until you have changed a few things on your indicators, mainly looking at the type of line attachment head which makes all the difference and also the restrictions of movement of you indicator.

Other matters we are going to look at is how an eel probably approaches the bait used, or more importantly how it possibly moves away from the rig once it has picked the bait up ready to run, or in some cases not run and sit there with its prize!

#### Experiment 1:

To the amusement of the local neighbours I set up in the front garden one rod and on a single bank stick and set up two types of indicators, the tools that I use was

1: One rod set up on bank sticks

2: Two types of drop back indicators.

3: Two types of indicator head that attaches the line one standard adjustable made of plastic from "Solar" and the other a stainless attachment from "Solar".

4: Set of scales Avon 40lb and a tape measure to measure distance of rig to indicator to see if the measurement of force changes over distance, including line ejection lengths.

Now I am not going to blind you with mathematically equations as the measurement of force or pull and push, which comes under Newton 3 laws of gravity belief it or not, which I incidentally found out and to be quite frank maths is not my strong point so we are going to work in ounces of pressure to un-clip the line from the two types of indicators and indicator heads using the scales.

The first diagram shows a standard drop off indicator used by some eel anglers with either a hair clip or better still an adjustable line clip in plastic.

One thing I will state at this moment in time is that I use braided lines not mono, so I had to do a few tests with both and came across some very interesting results. Another thing is that I'm not criticising the J.S Rig as this was originally designed as "Low" resistance rig in the first place as that was in its day the case and still the belief today, and still is fact that eels don't like resistance, this may seem a contradictory term with the subject I'm talking about now, but hopefully I will be able to explain in detail for you to understand the basic laws for bolt-rigging for eels or reducing the opportunities the eel has to deep-hook itself or you missing on the strike.

Using 10lb mono on a standard plastic clip and tightening the clip as far as it will go; I set the rig at 15 ft and repeated again at 26 ft away once my neighbour moved her car!! This measurement was taken from the lead to the tip of the indicator head and the same was done with the other indicator shown in the picture to the right of my standard indicators from Solar.

I attached the hook of the scales to the fishing hook of the rig (Type of rig is a standard running rig) zeroing the scales I pulled until the clip unclipped the line and took a reading three times for an average off the scales (Digital would have given a more accurate measurement) I got a



reading of nothing it didn't register on the scales, crude I know but when you did the same with the Solar Stainless head tightened up this increased to almost 4oz on average, a huge difference! So is this a good thing or a bad thing?

Well looking at it from an instant hooking angle using running rigs and a right way to mount the bait on the hook to pull the hook into the eel's lip a very good thing!!!! This is what can make a difference on a take to eliminate deep hooking, missed runs or aborted takes, but obviously it isn't as simple as that there are other permeable to look at as well, but may not make any change at on the end result at all.

Basically if you think about it when using a running rig, the amount of force using a standard plastic clip if it is changed to a stainless steel that has no moving parts from the Solar or similar the reason for this, is only other types I have seen like the Nash type have moving part on the head this will slide or ride up the line before unclipping using a standard pike style indicator for me they have too much movement compared to the type that I have been using since 2000.

The other factor you have to consider is the weight of the lead used, shape, length of the lead link if used. Does a short length or none at all just having a lead direct increase the effectiveness or decrease of the rig? How much give on line does this make? And how does this effect the hooking potential of rig on a taking eel, including other factors, what the lake bed is constructed of weed, sand, clay soft silt or gravel as the lead should act as an anchor point I use anything from 3-4oz lead the type of lead will be dependant on the area fished to optimise this factor?

Second aspect you need to look at is the rig its self whether fishing off bottom, ledgered with bait hard on bottom, pop-up bait and the length of hook-link or if a second insert is being used i.e. J.S rig for example which has two identical lengths of trace with two swivels which is supposed to eliminate twist on playing an eel? The reason I say this is because swivels do not rotate when under pressure effectively than they do when not under pressure, they have a tendency to completely lock up (increase in friction), the way around it is to use ball-bearing swivels which Solar or from Bulldog, they are small enough for our type of fishing as they have been used in big game sea fishing prior to that.

The third is to look at how we mount our baits to get the best hooking potential possible and finally how does an eel run with the bait once it has picked it? Does it turn and run off head first or does it simply reverse in the same direction as it came? How can we tell this when all we see is a run light on the alarm??? Tony has given us the internet article that may give suggestion to this factor for me personally and have said it before I think the latter is more plausible.

The next thing you need to look at is how fast or slow does an eel runs when it either attacks live baits or picks up dead baits or worms. How does it pick baits up does it suck it in from distance, or does it just grab it and run tail so to speak?

The last thing is how far the rig is from the indicator and how much sag or gravity is on the line dependant on the rig used either off bottom or ledgered est. The last is a lot harder to predict with out the involvement of Einstein or Isaac Newton (3 laws of pull and push force) and I'm not going down that path adding up a shopping list is bad enough!

So where to start next? Probably the next best thing is look at possible ways an eel physically picks or grabs presented bait using certain rigs and hooking methods, now this is mainly theoretical with some practical experiments to back these theories up to a point.

Firstly we will look at the different hooking methods used to present a bait and what may happen from the initial pick to the strike using ledgered baits and dead bait sections mainly fish heads which I prefer of tail sections due to their smaller surface area compared to fish tail sections. Usually there are a few methods of hooking a bait, people most commonly will use a big hook anywhere between a size 4-2 hook with a large gape as shown in the diagram hooking it either right through the bait or hooking it through one side only so the point is protruding from the bait as shown.

When this method is being used the hook has a tendency to rotate from left to right when an eel takes the bait in its mouth flattening against the bait when a strike is being made the force of an eels mouth clamped around it will prevent the hook from turning into a better hookable position and will rip either through the bait sideways resulting in a higher miss strike ratio than a hit ratio, or dig into the bait with the same result.

Fig 1:

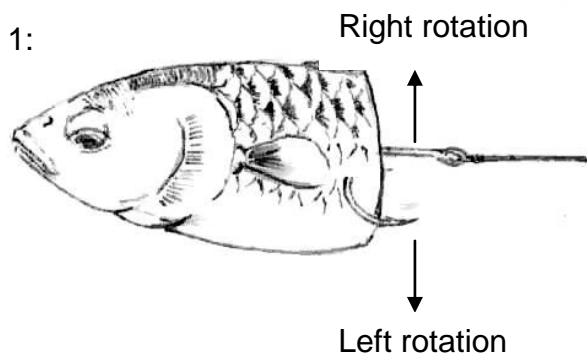
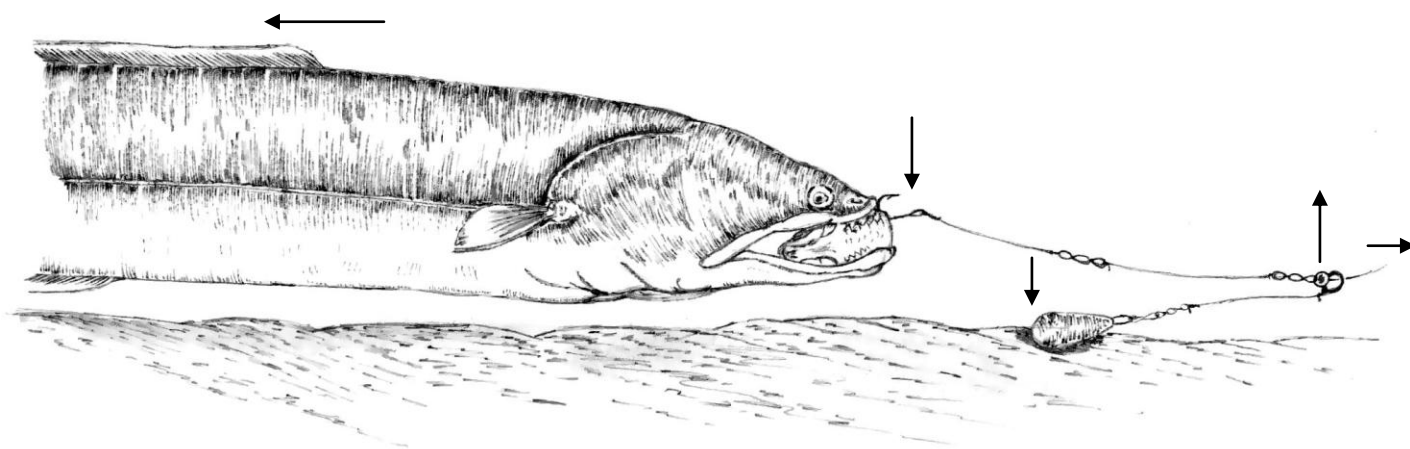


Fig 2:



Or another scenario is that the size of hook itself prevents it entering the eel's mouth and when a strike is made the same result will happen again a missed strike.

Another scenario is if you are using a longer hook-link or double link and a standard run clip as mentioned before there is nothing to stop the eel from swallowing the bait with no initial indication. The off chance that an eel will hook it self is very remote on the initial pick up or on a run and a connection has to be made by a strike on the anglers part, but if you had a metal clip when the eel backs off the rig to run, the amount of force used to unclip (4oz) would try and rotate the hook into a possible better potential hooking position as the tension or sag is taken out of the line to the indicator clip, but this is if the bait is taken head first (and fished hard to the deck). If it doesn't hook on the initial run, it would have been missed anyway, as the hook may have not have been in the hit zone in the first place resulting in a "missed strike". Or would the turning of the hook make the eel eject the bait resulting in a drop run dependant on the speed of the eel in the reverse mode?

Another interesting factor looking at the arrows on the rigs, this is to simulate what probably does happen; let's say that the hook-link and middle trace is accurately 20 inches in length and the lead link trace is exactly 8 inch how much movement over a distance of 20 ft from the hook to the clip

does the eel have before any kind of indication (Clip irrelevant at this moment looking at the diagram fig 2: and the hooking arrangement in fig 1: incorporating a lead of 2¾-3oz, bait presented hard on the deck, using mono line of 10lb)

Fig 3:

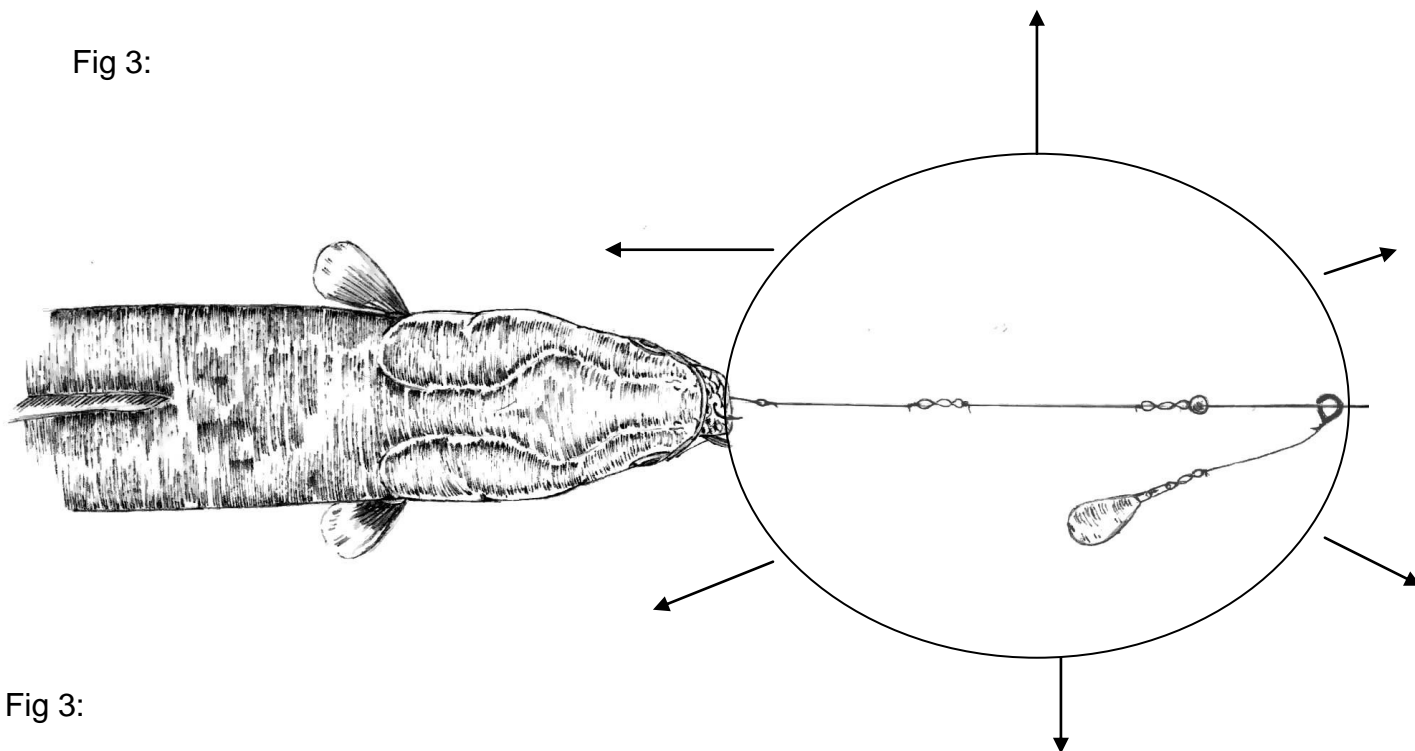


Fig 3:

This measurement is also including natural gravity of the line even tightening down till the line will not pull from a tightened clip, you have the hook-link (HKL) 20" a pivot lift height of the lead link of 0- 8 inches and a distance of line ejection (DLE) from the clip of 5 inches in total the eel can move 25 inches on a 300° circumference in any direction up to a height of 0-8 inches, this is a lot of movement with no indication and to be quite frank unnecessary movement. Now look at this way at 20 ft it can take 5 inches of line so at 40 feet it can take 10 inch or more (the greater the distance the greater gravity effects the sag on the line) increasing the circumference of 30 inches or more and a lift height of 0-8 inch and so on.

Using braid on the other hand the circumference is far less great down to just less than half over using mono due to the properties of braid and doesn't suffer as dramatically with gravity or stretch than mono. (Bearing in mind that's if the rig lands fully stretched and in a direct line not coiled this will also delay the indication reaction time even greater until the eel straightens the rig out and still the calculation has to be measured before a run is registered). Using a direct lead will only decrease the pivot lift (3 inch), but even this would increase minimally you indication, using a shorter hook-link would increase you registration even better and so on.

Looking at same scenario using braid with the same rig and same conditions the result to me were not surprising as I been using braid for eels for over a decade, 20" hook-link, a pivot lift of 0-8 inches (Lead-link) but only had a clip ejection of 1 inch giving a total of 21 inch 300° circumference, with very little effect of gravity over a higher distance, or due to stretch. At 40ft that is a difference of 12 inches and a pivot height of 0-8 inches or 3 inch with a direct lead, compared to mono, this calculating the lowest number of the scale when in fact this difference will be higher.

Obviously if the bait is taken side ways then the hook is nowhere in the hooking zone no matter what indicator was used. When this happens our natural reaction is to leave the next run a bit

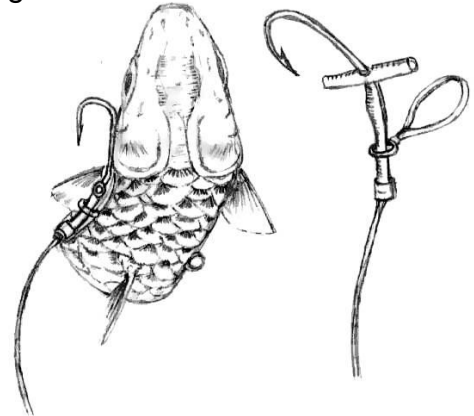
longer before striking and eventually you are going to cause a deep hooked eel unintentionally, this would increase the possibilities to the inevitable. Looking at the picture above hopefully you can imagine these variables a lot better.

I firmly believe that when an eel takes the bait and we get a run on the alarm that is not swimming forwards but backwards and this is another factor to missing a strike presenting the bait under the conditions mentioned above, this in itself has a large impact on the whole picture for me personally.

Fig 4:

Now changing the size of the hook to a smaller hook size 8-11 dependant on the hook and using a different method as shown in the diagram, using a bent hook with a curved piece of shrink wrap about half an inch long pushed up to the bend you have made in the long shank X slightly above the eye as shown in the diagram to the right using a small "Drennan" ring with an elastic bait band to secure your lightly hooked bait.

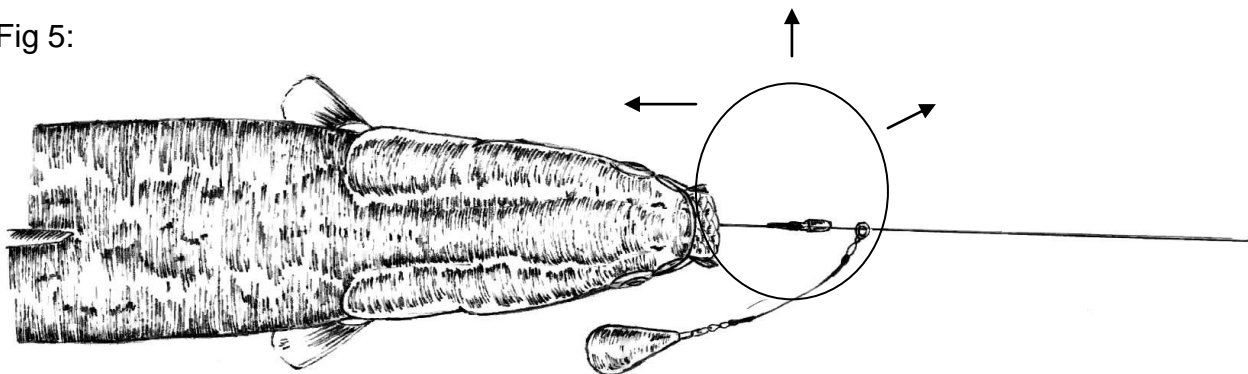
Fig 4:



The way I have found more effective is to hook the bait just before the gill plate and push the hook actually through the gill plate and using the band pulling it through the flesh section and securing it with a piece of stiff silicone and using a "T" bar on the small size 11 hook, this keeps the hook proud of the bait and prevents rotation and not too big for the eel not to take the bait in its mouth due to not using a larger gaped hook. Another factor is to use a short piece of hook-link keeping it down to 4" or less and using pop-up baits instead and a metal clip with a 4oz force then this would increase your hooking potential or would it?

Bent hooks are more effective for eels I feel if the baits are either fished off-bottom or pop up style, as shown in the diagram below, using the other type of plastic clip would it be more or less effective? The answer is yes it would make a difference I have taken eels to date over 5lb 01oz using these methods and quite a number of 4lbbers.

Fig 5:



We have now changed the hook-link to a 4 inch trace with no middle section and with a 8 inch lead link, using mono, you have a pivot length of 0-8 inches and a distance line ejection of 5 inches this in total is 9 inches over a 300° circumference with a lift of 0-8 inches at 20ft, so at 40ft

this would increase to a minimal of 18 inches of movement before any indication, a big difference of 12 inches and possibly more using a conventional J.S rig.

And if you are using braid this will be,  $4(\text{HKL}) + 1(\text{DLE}) = 5 \text{ inches} + (4\text{ozf})$  of movement at 20 ft with a 0-8 pivot lift or 0-3 having a direct lead, and a slight increase of 1-2 inches over 40ft, giving a total of 7 inch movement over this distance, more than 50% less over mono, increasing your indication by more than 50% this is not maths its fact and a better instant hooking mechanism.

On these findings alone the J.S rig as it stands conventionally is not the rig to look at for creating a bolt rig, but by getting rid of the middle section and popping the bait off bottom you have increased the rigs bite indication a great deal, "Sidley's" strike timing must have been impeccable to lip hook eels every time, (I am not that gifted so I am going the hard way to get to the easy way so to speak!) and using it yourselves how many eel have been deep hooked fishing long hook-links and low resistance rigs, over the years, or is deep hooking "was" (past tense) and still accepted as a part of eel fishing an probably rarely reported because no one likes to admit to deep-hooking because we care for the eels welfare that we pursue, we know its not a good thing for the eel when it does happen and no one want an eel to die on them within the club I am certain of that?

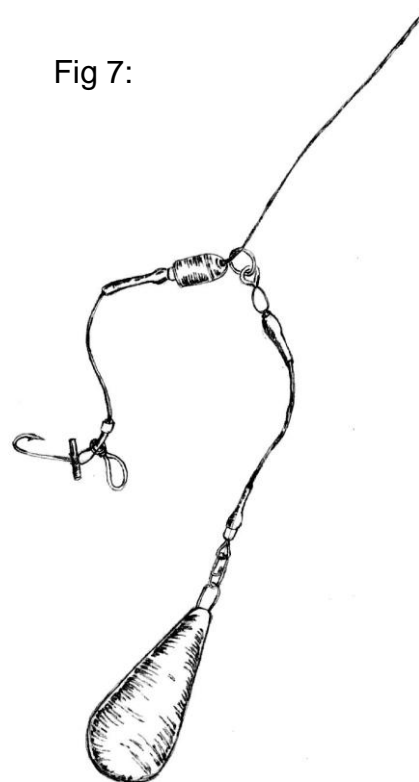
This is not a criticism and hopefully seen as development, the J.S is nearly thirty years old since it first hit the head lines, and was a revolutionary rig at that time, but its time we try to move on, thinking about our techniques a bit more if you never want to see a deep -hooked eel or missed strikes and aborted runs anymore, for me personally it was 2000 since I first started using the SFR and curved hooks and as far back as the 99 season I have moved away from conventional eel fishing methods, I haven't deep hooked an eel since (touch wood) so there must be something in it, even though it is still only the tip of the ice-berg. You may see it as carp fishing for eels, but my main aim and sole purpose is to prevent and hopefully eradicate, this is the "Holy Grail".

Fig 7:

It is still a very basic ledger rig but still has slight movement due to having a lead link of no more than 3-6 inches and the hook-link being pulled will levitate the length of the link before unclipping if this is reduce to a lead directly being attached this would increase the hooking potential even more as there is less give on a taking eel, this as far as an eel run is concerned would be in tenths of seconds possibly from start to finish on a slow take it could make that little bit of difference on the effectiveness, but the bait must be off bottom for it to work and a very tight clip with a pulling force of 4oz.

As shown in this diagram it looks different now and you can see the possibilities of the anti-deep hooking properties this rig fished on a tight line to a tight clip can make all the difference and a instant bolt rig using the force of the clip as the hooking mechanism, and the lack of tension on the line even bending the rod to the rig, when the eel reverses from the rig in any direction the hook is always in the hooking zone no matter how it takes it, why

Fig 7:





because smaller sections of baits can be used which will also increase your chances.

The other factor in the equation looking at the next diagram is that you are changing how the eel initially takes the bait in the first place by popping it up compared to picking baits up hard off the deck as shown in the last picture (Fig 2).

With the other method using longer hook-links the eel can basically suck in the bait, possibly like a carp does? While this way pop-up style it has to grab it or get closer to suck it in changing its head angle to do so.

In turn this would increase the effectiveness of the rigs instant hooking capabilities using a tight line and a clip with a pull-force of 4oz?

It may pick up the 4oz lead at the same time before it unclips the rig, this in turn will pull the hook

straight into the bottom jaw even if taken side ways in theory an increase of 8oz of pressure or force on a taking eel or even if the lead has travelled some depth into a silty bottom this force may increase slightly.

Looking at the rig in more detail with the next diagram the bait has an insert of foam cut to fit inside the bait the bait band is threaded through this; it will not come off and endanger the eel it rips straight through the baits leaving the hook and foam still attached to the band.

Fig 6:

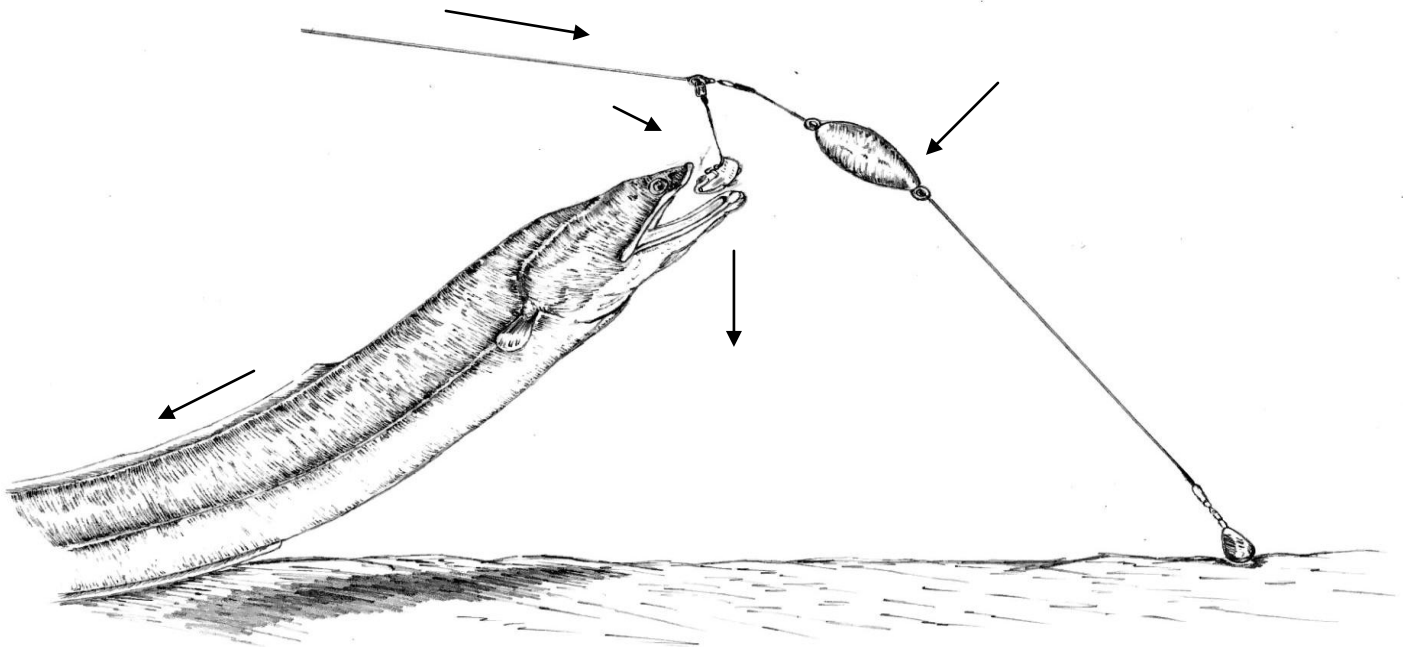
A black and white illustration of an eel on the seabed. The eel is shown in profile, facing right, with its mouth open and a hook-and-lead rig inside. The rig consists of a hook connected to a lead. An arrow points left from the eel's head, indicating its direction of movement. Another arrow points right from the hook, indicating the direction of the hook-link. A third arrow points up from the lead, indicating the upward movement of the bait. A fourth arrow points down from the lead, indicating the downward movement of the lead. The seabed is depicted with a textured, wavy surface.

A black and white illustration of an eel on the seabed, similar to the one above. The eel is shown in profile, facing right, with its mouth open and a hook-and-lead rig inside. The rig consists of a hook connected to a lead. An arrow points left from the eel's head, indicating its direction of movement. Another arrow points right from the hook, indicating the direction of the hook-link. A third arrow points up from the lead, indicating the upward movement of the bait. A fourth arrow points down from the lead, indicating the downward movement of the lead. The seabed is depicted with a textured, wavy surface.

Foam insert to pop bait up changing the angle of the hook to a 45° angle causing an anti-deep hooking hook-link naturally

A black and white illustration of a bait with a foam insert. The bait is shown in profile, facing right, with a hook-and-lead rig inside. The rig consists of a hook connected to a lead. An arrow points right from the hook, indicating the direction of the hook-link. The bait is shown with a textured, wavy surface. The hook-link is shown at a 45-degree angle to the horizontal.





Looking at it the same way with the bait fished on a Dyson or any other type of off bottom rig you can see using the curved hook-link as mentioned above, but in this case hanging down having the same natural 45° bend on the bait, so when the eel comes off bottom as show to take the bait and pulls against a 4oz force of the line clip, the eel will be pulling both against the resistance of the clip and the buoyancy of the float pulling the hook home as shown above in this diagram.

Due to the hook having a curve which has been exaggerated with stiff shrink-wrap that is also curved, when put under pressure from a taking eel, either fished off bottom or on a pop up, the hook will rotate on a pivot axis from right to left in the eels mouth and fold around the out side, pushing downwards into the eels lip (top or bottom dependant on presentation), preventing the eel from swallowing the bait due to the amount of resistance transferred by either by the rig or the indicator clip, this on its own a sure way to go if we want to eliminate deep hooking for ever and start thinking about how we are fishing for eels to put deep-hooking into the N.A.C. history books.

These are the basic rules to follow when using bolt trigs for eels either fully fixed, semi (free running using the clip as the bolt)

- The bait has to be off bottom, either using an off-bottom rig or popped up baits.
- Heavy leads for anchorage, or to discourage more movement of the whole rig, using light leads will increase to circumference of rig-movement up to three times as much.
- A good metal ball clip to put on the amount of force on a taking eel to cause the eel to hook itself when reversing with the bait.
- You have to look at the hook-link and bait size and hooking arrangement and de-scaling your hooks to a smaller size and not using wide gapes, ESP G4, ESP longshanks, or Korda longshanks x are a good set of hooks to look at, or similar hooks in design.
- Curving the hook or using a curved extension to fold over the eel mouth to stop it taking the bait any further to prevent deep-hooking.

Get any of these factors wrong and you will have problems or will not get the desired effect and then the method is written off, get it right and it will open new doors on presentation and eel fishing concepts still yet to be discovered.