Waterlife Recovery East

a mink-free East Anglia

NEWSLETTER 2: Aug 2021

Good news all round

One of the joys of a relatively new project such as WRE is that no two months are the same. New discoveries and insights pop up all the time, each contributing to a sense that rapid progress is being made and increasing confidence that our objective of a mink free countryside is both feasible and perhaps a little closer than I, at least, had imagined. In this, the second WRE newsletter, we will hear from Prof Bill Amos on the fascinating genetics work that is developing at pace, and I shall explain why we now think that there are probably fewer than 20 breeding female mink remaining in the whole of Norfolk. There has also been some extremely encouraging news about how our work may contribute to a major water vole conservation initiative in the medium-long term, building on the smart trap network being rolled out right now by WRE-funded staff across much of East Anglia. This newsletter has news from the counties, and includes reports of increasing workloads as juvenile mink start dispersing from their natal territories.

How many mink?

For a project like ours, knowing how many mink remain in each area is clearly of great importance. But how can you even estimate the numbers of a relatively small, cryptic animal that spends much of its time in or near water and mostly emerges after dark? The reality is that trying to count mink all across the region would cost a fortune, take years and likely be no more than a poor under-estimation of true abundance. A far cheaper, and arguably more accurate, estimate can be developed using mathematical modelling. A sophisticated population viability model called *Vortex* can pull together information on reproduction, longevity and 'harvest' (trapping removals), then tells us how many mink would plausibly generate the trapping results we're seeing. I ran the model using mink catches within Norfolk which, thanks to the Norfolk Mink Project (NMP), has the longest and most complete trapping coverage in our region. The results, showing that there are probably fewer than 20 breeding females left in the county, so surprised me that I checked and re-checked them, but got the same answer every time. Yet, when I rather hesitantly told Simon

Even if all mink emerged in daylight, like this one, counting them accurately would be almost impossible.

Baker (NMP Chair and WRE Vice-Chair) the results, he expressed no surprise, saying that this low number was pretty much what he had expected!

Of course, the *total* number of mink in Norfolk is greater than 20 - some females don't breed, and for every adult female there's probably an adult male. Moreover, at this time of year, late summer, the population is swelled by a substantial number of juveniles, so there may plausibly be 150 mink in Norfolk as I type this. But 42 have already been trapped in the county by WRE in 2021, and many more will be removed as the year progresses. The definition of progress is that there will be fewer females breeding in Norfolk in 2022 than in 2021, and hopefully that will be equally true for each county in our region, even if absolute numbers of mink aren't as low. The situation in neighbouring Cambridgeshire will be especially interesting. Though much smaller than Norfolk, Cambs has already accounted for twice the number of mink in 2021 - no doubt a reflection of the fact that trapping had been much less intensive here until WRE came along and turned things around. It is surely a racing certainty that there will be fewer mink breeding in Cambs next year as a result of the WRE effort, but of equal importance is that far fewer mink will be passing through Cambs en route to Norfolk and the WRE Core Area.

Mink are seasonal breeders, giving birth to a litter of typically 4-6 kits each May. Come August, they are independent and start dispersing away from the natal territory, seeking shelter and easy prey; water vole and rabbit colonies are favoured.

New charity

As mentioned in the earlier newsletter, a new charity (to be called Waterlife Recovery Trust) will soon be set up to centralise and coordinate the raising and spending of funds, and to directly employ people to supervise our growing network of smart mink traps. Simon Baker has completed the substantial task of preparing the necessary paperwork, and the charity's Treasurer, Bennie van der Berg, has applied for a bank account. A formal application to the Charity Commissioners will be submitted immediately the account has been approved.

There are a number of advantages of having Project activities all under one roof, so to speak, among them the ability to plan ahead and offer greater employment continuity than is currently possible. Another factor is that many grant-awarding Trusts and Foundations will only fund charities that have been set up for a year or more, so the sooner we become established, the better.

Recent activity

Tradition has it that mink can be trapped within just two periods of the year - when the juveniles are dispersing from where they were born (Aug-Oct) and then during the mating period (Feb-Apr). Some authorities even talk about closing traps outwith those periods, because it's a waste of time; mink just can't

be caught. Well, no longer; it seems that, with the right strategy, mink can indeed be induced into traps through May and June, and the secret of success is scent. In early May, Cliff Carson had been seeing what he thought to be not one but two adult female mink on trail camera footage near his house near the Ouse Washes in Cambs, so I went over with traps and scent lures to find out whether these animals might respond to any particular aroma. The subsequent capture of two females proved Cliff to be entirely correct and, what's more, one animal responded to the scent of another female mink (perhaps thinking it to be a territorial competitor) and the other was caught responding to the scent of an adult male mink. Time and again, we're finding that anal gland scent is a remarkably powerful mink attractant.

Genetics news from Bill Amos

Straight from the horse's (or, in this case, the Professor's) mouth, here is an update on Bill's progress in generating wondrous insights from mink ear-tips. Bill is experimenting with ways to increase the efficiency and efficacy of what is a very complex and time-consuming process, but even he is surprised at how well things are developing in the lab. Readers of this newsletter would laugh at how Bill and I discuss progress and plan ahead. He has a passion for hover-flies, and I have a garden full of them, so we amble around the patches of wild flowers, me upright, Bill bent double, with intense talk of alleles and micro-satellites occasionally interupted by squeals of delight from Bill as he finds an unusual and exciting miniscule insect that invariably promptly disappears. Science sometimes moves in mysterious ways.

The good news is that the genetics is ticking along rather nicely. I now have 26 genetic markers working well and have completed the genotyping of the first ~270 animals. These markers allow me to distinguish between pairs of 1st degree relatives and pairs of unrelated individuals with about 95% confidence. Of course, half-siblings / cousins etc. will fall in a rather grey area. I can also distinguish between full-siblings and parent-offspring pairs about 80% of the time. I have also rerun the analysis that plots how related mink are in relation to how far apart they were sampled, and I can confirm that the relationship is very strong, indicating a high degree of population substructure (individuals tend not to disperse far from where they are born). I am also developing a method for estimating local population size from the frequency with which I find 1st degree relatives. The idea is quite simple. If you choose two people at random from Cambridge, the chance that they are 1st degree relatives is effectively zero. If you choose two random people from a tiny, isolated village, the chance is small and may even be moderate: the smaller the population, the more related an average pair of individuals will be. This approach seems very promising and is already helping me to estimate how local population density varies across East Anglia.

On a different tack, Tony has nagged me to look at mitochondrial DNA. This is the DNA inherited through the female line only. All a female's offspring will appear the same as her but a father will normally differ from his offspring. This genetic marker therefore allows us to ask questions about whether juveniles are likely the offspring of particular females and, indeed, whether one or several females likely founded any given local population. We may even be able to understand more about longer term / broader scale patterns of how the mink population has grown. I did a trial on 8 samples as a test and all 8 worked nicely, yielding 8 different DNA sequences. This indicates that we have plenty of variation to work with and offers a very positive pointer towards us being able to understand how far daughters tend to disperse from their mothers. As Tony points out, when we get to low numbers in a region, mitochondrial DNA should help to tell us how many breeding females are likely present.

Family Awayday

For the first time, almost all those directly involved with the Green Recovery Fund WRE project were able to physically meet in deepest Norfolk on August 18th, after many months of virtual meetings. Not for us wine and canapés to break the ice, though. On with the surgical gloves and, with gleaming scalpels in hand, we gathered around a sequence of mink carcasses to learn how to find and examine the reproductive tract, and how to discover what the animal had been eating. The aim was to ensure that all project staff could extract the maximum information from every animal caught, thereby improving our understanding of the population and speeding progress towards a mink-free East Anglia and all the wildlife benefits that will bring. The afternoon was pleasantly spent beside the beautiful River Wensum discussing best practice for operating mink rafts and watching Stephen Mace (Project Officer for Norfolk) test the mink-finding skills of his specially trained labrador, appropriately named River. Subsequently, a press release about River was released by the Countryside Restoration Trust, a WRE partner, and this generated much interest, including two BBC interviews and a nice piece (some of it accurate!) on the BBC News website - https://www.bbc.co.uk/news/uk-england-norfolk-58342375.

From L to R, Emily Coleman, Stephen Mace and Alice Wickman, the three WRE Project Officers, enjoy a field day with Stephen's labrador 'River' and other team members, including Nick Oliver from Suffolk (background). River was showing her prowess in finding mink.

News from around the region

The period since the last newsletter has been characterised by steady mink catches at first, then a predicted lull, then a flurry of activity as the 2021 cohort of youngsters began to disperse from natal territories in August. What's striking, though, is that captures are concentrated in a relatively few places rather than scattered right across the region. This is consistent with the picture emerging in counties with the longest history of mink trapping and the most comprehensive coverage of smart traps today - that relatively few breeding females remain, and they tend to occur at places that have attracted mink year after year. Although it is important to trap over the whole of our area, these favoured sites can become a real focus for trapping effort once we discover them, and hopefully this will allow us to mop up the remaining mink more quickly than would otherwise have been the case.

Catches of mink in **Cambridgeshire** since the start of the Green Recovery Challenge Fund award have broken all records, and currently stand at 84 for the year to date. This is not a reflection of there being more mink in the county now, but simply that there are far more smart traps in which mink can be captured. Exciting news from the site near St Neots that has produced the highest catch rate is that a water

Renowned Fenland conservationist Cliff Carson often equips his rafts with cameras; these yield amazing insights into the behaviour of mink & native wildlife. Some examples are on the WRE website.

vole has been seen on a trail camera for the first time in years - further evidence that native wildlife will often bounce back rapidly once mink have been removed.

Norfolk catches have focussed on the Geldeston Marshes area of the Waveney Valley, where six mink have been removed over a 3-month period, and on the River Nar in the west of the county. One site on this beautiful river has yielded 6 female mink in a fortnight, but others have been caught here over the past year, and this has all the characteristics of a mink hotspot - a site that attracts a steady stream of mink over a long period of time. Two denning sites in Norfolk have reinforced our realisation that mink will happily use locations close to human activity. One, near Upton, was in the roof of a holiday bungalow, and another was under decking close to a pub. Such sites normally come to the attention of users and passersby due to their rather powerful aroma!

The total mink catch for **Suffolk** in 2021 is 11, and all of these have been in the River Waveney and River Alde catchments. The highlight of the work for the Suffolk Project Officer, Alice Wickman, has been visiting some amazing sites when deploying the rafts and meeting so many enthusiastic trapping volunteers who are dedicated to protecting the wildlife at their sites. Alice believes that the low mink total compared to neighbouring counties is due to the many dedicated volunteers who have been trapping mink for over 20 years. Alice says "Now that we have such a good baseline network of trapping volunteers in Suffolk we aim to target our remaining smart rafts at sites where mink have been sighted recently, so please report to us via the WRE website promptly if you do spot a mink in Suffolk".

An active trapping group is now using their first Remoti traps on the River Ingrebourne and Weald Brook in **Essex**, an area with natural water vole populations. Highly urbanised river corridors are a challenge for South Essex, and mink rafts can be targets for vandalism. The Essex Wildlife Trust volunteer group has had to be very careful to select trapping locations that are secure even though one is within earshot of the M25. EWT is looking forward to expanding its Thames

Obviously intrigued, this Norfolk fox is probably investigating the various aromas that accumulate on a mink raft over time.

Estuary operation onto the Mardyke with potential funding for a member of staff included. More on this in future newsletters.

In **Hertfordshire**, one of the 18 traps installed by the Herts and Middlesex Wildlife Trust to prepare for the re-introduction of water voles, and protect them after release, has produced three mink adjacent to the River Stort, just south of Bishop's Stortford. Three mink would have the capacity to completely wipe out a water vole colony of the size recently established by HMWT on the nearby River Ver, so effective vigilance like this will be necessary in the long term to maintain gains made.

And, finally, as this project expands, we are always on the lookout for new volunteers to look after smart rafts in their local area. We supply all the equipment and training at no cost; all you need is access to a suitable waterway. Please do get in touch via the website if you, or someone you know, might like to join the Waterlife Recovery team in this way. In early 2022 we will also be recruiting a new part-time staff member in Suffolk and, later in the year, potentially new staff in all the counties we cover. If this sounds attractive to you, or you know someone with the right interests and a can-do attitude, with a passion for practical nature conservation, do contact us.

With my best wishes,

Tony Martin

Chair of the WRE Steering Group