NEBBS News Note No. 9

13 March 2021

Compiled by NEBBS group coordinator

Northeast England Beached Bird Surveys

Save the North Sea

Feather analysis – in motion

1. Swan,

A headless & tailless white swan was found beached at Seaburn (Tyne & Wear) by NEBBS surveyor Peter Collins on 3 January 2021. Peter collected the corpse for me and I was going to pick it up to pass on for Avian Influenza testing, but another Covid-19 lockdown began and regulations tightened. I therefore asked Peter to collect some flight and body feathers to send to me, which he duly did. Professor Martin Collinson at Aberdeen University agreed to carry out DNA analysis of some of the body feathers to determine the actual species involved.

Swan body feathers (4 Feb 2021), 20p coin

Professor Collinson has very kindly offered to do this free of charge. I have sent six feathers to him. The analysis will be performed in a few weeks' time when he has cleared a backlog of work.

2. Red-throated Diver,

A live red-throated diver beached on 16 November 2020 at the Longsands, Tynemouth (Tyne & Wear) and was taken for care by Blyth Wildlife Rescue but died later that day. The corpse was offered and donated to me and I received it on 26 November. On examination I recorded biometrics and noted that on the left flank there was a large patch of stained feathers. If this was some form of oiling then this would have likely been the cause of death. I collected some of the stained feathers and some clean feathers from the right flank for comparison, hoping that perhaps an analysis may be performed. I was directed towards a company called Fugro by Will Miles of the Shetland Oil Terminal Environmental Action Group. At Fugro (Heriot-Watt University, Edinburgh) chemist Dr Andrew Rawlins confirmed his laboratory could carry out analysis to determine if the staining was oiling and of what type and origin. This would be at a cost of £367.50. I wondered what could be done as the NEBBS finances were somewhat below this figure and I contacted North Tyneside Council to see if they may be interested in contributing towards such an analysis, and still await a response.

I contacted Dr Susanne Kühn, our colleague in The Netherlands to see if she may be able to assist in any way using her FTIR (infrared spectroscopy) machine and she asked me to send two stained and two clean feathers. In mid-January she was able to investigate. Here is her reply … …

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Dear Dan,

Today I had some time to look at your oiled feather samples and run some analyses with the FTIR.

During one of my recent beached bird surveys (31 December 2020) I found a guillemot with some oil in its feathers and took clean and polluted feathers as additional sample.

Some observations:
FTIR does not detect any difference between species, which is not very surprising. Also no difference between measuring the shaft versus the barbs.

All clean feathers were classified as 'Protein (Human hair)' by the internal library, they do not have feathers in their library system.

When measuring the oiled feathers (both the diver and the guillemot), two additional peaks appear on the spectrum (between 3000-2800nm). They seem to be very similar in both birds. Both spectra are still classified as Protein, but again, oiled feathers are not in their system.

So far we are able to distinguish between clean and oiled feathers using FTIR however, we were able to do so by visual inspection anyways. I think it is a good idea to continue to measure oiled feathers and see if we can detect a difference at some point, maybe also check on other pollution in feathers. I'll ask Kees Camphuysen to save some feathers from oiled birds if he encounters them during his autopsies.

Sorry that we cannot come up with cool results at this point but maybe we can find some new details in the future.

I've attached the spectra of oiled and unoiled feathers for both the diver and the guillemot for your information.

Best wishes
Suse
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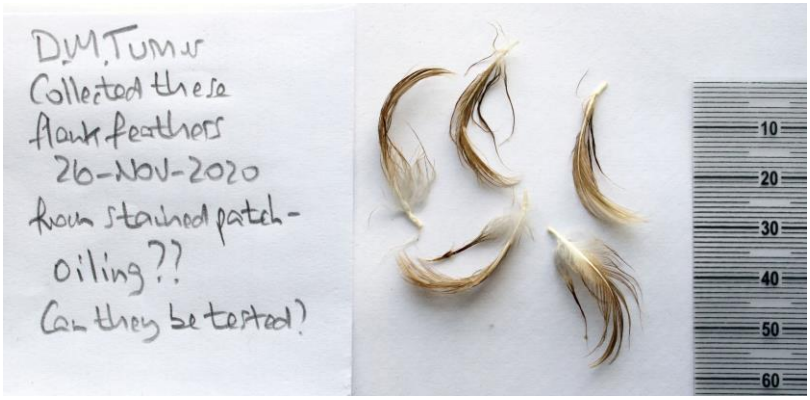
The other diver feathers lounged at my home as my birthday approached and then I thought, "What about a Birthday Fund-raiser?" and I prepared a document in readiness to try and attract donors so we may afford the Fugro analysis. I emailed my document to Dr Rawlins to ask his thoughts on my 'great idea'. He consulted with his UK Head of Environmental Services and the upshot was that they offered to do the analysis, for R&D purposes, free of charge. This was something I had not expected and a great outcome! I have posted five feathers to Dr Rawlins. Their offer was on the basis that Fugro would be acknowledged on any material that stems from the analysis results and if the results were scientifically interesting, we would be able to co-publish them in a scientific journal. I could not refuse this wonderful offer of assistance.

The red-throated diver body has been donated to a Newcastle University student who will reduce the bird to its skeleton, for articulation.



Stained red-throated diver feathers, mm scale (2 March 2021)


Red-throated diver (26 November 2020)

Dr Jan Andries van Franeker, Wageningen Marine Research

Following a long career as a marine biologist, Jan retired at the end of 2020, but continues with Wageningen Marine Research as a guest scientist. Jan has led the international 'Save the North Sea' fulmar project since its inception in 2002 and continues his involvement, now with Dr Suse Kühn at the helm. Please refer to this link for Jan's retirement book from his friends and colleagues (see especially page 30) … …
https://www.albelli.nl/onlinefotoboek-bekijken?widgetId=fb850c0d-bc62-472c-824a-c4529f4fb529

In conclusion Please continue to return your regular survey reports. Sending thanks to everybody for your continuing involvement and my best wishes as the coronavirus pandemic starts to ease.

Kind regards, Dan Turner (Group coordinator). Email dan.m.turner@btinternet.com