

Interaction with the client

First email from client.

29th September 2018

BO is Bel Ombre, the southern site. The field station is heavily shaded, with little to no power and is situated down a steep hill about 100m away from the echo aviaries. There are no external echo hoppers at this site, food is only provisioned in the aviary.

CA is Camp, the northern site. There is a large clearing with echo and pigeon aviaries and hoppers clustered in it, along with a well-equipped, solar powered field station. They were also trialling an internet connection from here but I'm not sure where they are with that.

Both sites have a weather station box that resembles a beehive. This could be used as a weatherproof area to house a receiver if required. This may be more helpful in the south. A manual download is absolutely fine if transmission to central repository isn't possible. Battery charging is fine as an option. Solar is good too. All parts need to be robust enough to either be dumped in a barrel of liquid for disinfection, or easily removed from the hoppers so that they can avoid submersion.

Other useful info - The echos weigh about 150 - 170g but the pigeons are about 350g. If a camera system is also installed to snap a picture of an individual as it lands on a feeding station then it's probably best to make the supporting arm for the camera able to support the pigeon weight. They are a bit thick and will land on anything, whether it can support them or not. They will do this repeatedly.

It would be ideal if we could have a system that is easily repaired by people who are not computer scientists. We would really appreciate the production of a basic user manual with a dummies guide to troubleshooting.

Question	Answer
Priyesh Patel (prp6) 07.10.2018	Debbie Fogell (djf41) 11.10.2018
1. Could you provide us with a demo set of data that is currently being recorded about the birds (or things you'd like to be recorded) so we could understand what our system would have to be capable of storing / displaying.	<p>As for the data collection – the most basic information that we would need is which birds were recorded on a daily basis. It would be preferable if this could be done in a way that could simply report back a single entry per individual, but with access to the full background table of which individuals, when and for how long, as both of these sets are scientifically relevant and answer different questions. Ideally this list could be easily connected to our studbook. This is currently just a giant complicated spreadsheet. I have attached a snapshot of it – I am unable to send you the spreadsheet as this would be in breach of my data sharing agreement with MWF. It would be so helpful if you could easily pull up some (hopefully all) of the following from a trigger of the ring tag: Individual ID, Name, Sex, Male parent, Female parent, Age, Breeder or Non-Breeder, Nest site from the previous breeding season, Nest site distance to hopper.</p> <p>*Dummy data s/s attached in the email</p>
2. Can we get a rough sketch of the north station layout of hoppers and the main base with distances so we could get some ideas together for local	-no reply
3. Is there a rough estimate on how much power could the solar powered base station provides so we could decide on if the ring-readers / network would need their own power source of could they rely on the existing infrastructure?	-no reply
4. Is there any preference on the platform the system is developed on (i.e. mobile app, website, computer program) or would this be up to us for a first version.	As for development platform – I would suggest that mobile app is the most useful for in the field but also having a computer app would be handy. A website is the least useful in this context given the terrible

	signal in general and no guarantee that internet is fixed at the field stations.
Elina Voitane (ev83) 08.11.2018	Debbie Fogell (djf41) 11.11.2018
5. Is there separation between technical and non-technical staff?	The people based at the field stations are all field workers from across a mix of different projects. Admin staff are based in Vacoas, a district on the central plateau about an hour away from the northern field station and an hour and a half away from the southern field station.
6. What is the Operating System currently installed on computers? (Mac OS/Windows)	Windows
7. Who will be extracting data from the system?	The project coordinator and researchers
8. Is everyone allowed/ will be allowed to use system or only senior members of staff?	Likely all field staff will access the system for data input but data output will be restricted to the coordinator/upper management
9. Would you need different levels of access to the system? For example: less experienced staff can't view some data or can't extract data.	Yes please, as above
10. If so, what is the hierarchy?	Field staff should be able to input but not report. If you could build any data checks in that would be helpful. For example, if people enter a date with a letter inserted or too many numbers then could you flag that? Coordinators should be able to input data and extract reports, and higher level staff should be able to extract basic reports but not input or edit data.
11. Please may I also ask you to explain the current ring system and which one is the primary ID number that birds are identified? STUD_ID – is it the old rings? New Stud ID – Is it the same type of ring but new one if the first one is lost? Ring ID left & right – Is the new rings from the shed that would be identified by colour and number?	Stud ID is their studbook number for breeding records and is nothing to do with the rings. The parentage of each bird is recorded along with their individual studbook number so that we know what the level of inbreeding is. This is common practice for endangered species monitoring. The left and right ring columns are the ones to look at. They describe the colour and pattern on the band on the left and right legs, as well as the code on each

	of those rings for confirmation if there is any ambiguity. The new rings from the Shed would go into those same columns for type, colour, pattern and ID code.
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Spreadsheet sent by Debbie:

Heading	Data type/Question	Debbie's answer
Echo Name	Do you use numbers for any names?	Not usually but there may be exceptions like 007 or similar. We can tell the teams that no names can be numbers going forward.
STUD_ID	015095 – does it always start with 0? Is it only numbers or also letters? How many characters?	The old Stud ID is always numbers which wasn't informative. The new ones were developed to provide more information so each one includes a 3 letter nest site code and the year.
New Stud ID	Is this ID in case the above one goes missing? When is this added? How do you generate this ID? 16HEM1 – Where does this come from?	16 is the year 2016 HEM is the nest site Hemlock Grove 1 is the eldest chick in the brood, 2 is the next eldest and so forth.
Ring ID left	gold 2115 – Is this the colour of the ring and number written on ring that is on left leg? Do some birds have both and some just one ring? Can this one be blank when bird doesn't have left ring?	Yes to all of those. Birds can have a single ring either on the left or on the right as a unique combination, so the field may be blank. Gold 2115 means that the ID ring on the left leg is Gold and has the numbers 2115 embossed into it
Ring ID right	orange stripe 314 – Is this the colour of the ring and number written on ring that is on right leg? Can this one be blank when bird doesn't have right ring?	As above
Female parent	Do you use numbers for any names?	Not normally and this can be stopped
Dam Stud ID	What is the format? Letters and numbers? How many characters? 008610 – Does it always start with two zeros?	This is the old or new stud ID issued to the female parent when it was hatched. So it may come in either number or letter and number format. Birds produced after 2010 or

		so all have letter and number combos.
Male parent	Do you use numbers for any names?	As with female parent
Sire Stud ID	007405 – Does it always start with two zeros?	As with Dam ID only this is the male parent.
2nd potential sire	Can this be left blank if unknown? If you have potential sire in mind, but after blood tests find out that he is not, do you delete the name?	We rarely double check parentage. This is left blank 99% of the time as the birds are generally monogamous for life or will at least breed with the same partner for numerous breeding seasons in a row. Extra-pair mating is almost unheard of but if the field team see two males at a nest site and can't be sure then this is added.
2nd Sire ID		
Group name	What is meant by this? Please could you provide possible answer to this.	This is for the release cohort they came from if they were a captive bred and released bird. This applies to very few birds but is still necessary.
DICE ref	What is meant by this? Please could you provide possible answer to this.	DICE is our institute at Kent. The ref is my lab reference for the samplers they send over. It is a combination of letters and numbers.
Sex	Data type: M/F or Male/Female?	M/F
Lay date	Data type 08/11/2018 ?	Yes, a standard date format is fine
Hatched	What would be potential answer here? YES/NO?	Yes/No (or binary 1/0)
inc days	Number of days? E.g. 5	Yes, this is the number of incubation days
Where Laid	Name of place without numbers?	New nest sites are added every year so it would be useful to have a drop down list that only the coordinator could add options to in the back end. This would prevent spelling errors if multiple fieldworkers are adding entries. Some nest sites have numbers in their names, like NB16, but most are names, like Hemlock Grove.
Where Hatched	How many places are there?	
Where Fledged	Can we have set options or would new locations be added later?	
Where Released		
When released	Data type 08/11/2018 ?	Yes
Where Now	Name of place as above?	Yes
Status	DEAD or ALIVE?	Dead/Alive

Seen since fledging	What would be potential answer here? YES/NO?	Yes/No
Recently Seen	What would be potential answer here? YES/NO?	Yes/No
Condition	Alpha numeric (letters & numbers)?	Letters and numbers
Last Seen Date	Data type 08/11/2018 ?	Yes
Death date	Data type: 08/11/2018 ?	Yes
Dateout	Data type: 08/11/2018 ?	Yes
Fledged	What would be potential answer here? YES/NO? or Data type: 08/11/2018 ?	Yea/No (or binary 1/0)
Notes	Alpha numeric (letters & numbers) Max. 100 characters enough?	I would say up to 200 characters

Question	Answer
Elina Voitane (ev83) 14.11.2018	Debbie Fogell (djf41) 22.11.2018
12. Please could you explain further what did you mean by 'basic report' and what would be normal report?	A basic report would be one just containing the information as to which birds have been seen within the frequency that they request – i.e. day/week/month and the nest site that they were hatched from, their ring combination/unique ID, and the year they were hatched (may be easier to have an output for #years old). They need not have access to any of the other back information.
13. Who would be registering users into the system? Is it project coordinators or higher level staff? Who will decide on what privileges each member of staff should have when it comes to using the system?	Higher level staff such as the upper management should have access to a simple report, much like the above, but it is likely that they will never use the data. The project coordinator is likely to pass on that information in a way that has been analysed or interpreted anyway. The coordinator should be the person who can change access privileges for their staff as they are the person who will essentially have ownership of the database and ensure it is accurate on a day to day basis.
14. If bird passed away and it was very long time ago, would you still need information in the database about that bird or can it be deleted after some time?	We use the information of every bird to work out the pedigree of the following generations so it would be preferred if the whole base layer of information is added to and not deleted. The resighting history for the rings may be overwritten on an annual basis but I would have to check this with Sion. I would say it is better to work under

	the impression that they will keep everything on file.
Elina Voitane (ev83) 23.11.2018	Debbie Fogell (djf41) 30.11.2018
15. From all the rows that you have sent us in the s/s please can you highlight the main parts that are used every day?	None of those sections of the stud book that I sent are used on a daily basis. The only info that is needed daily is which birds showed up and their unique identifiers, ring combo etc. The rest is needed on a monthly basis.
16. What information is collected about birds on daily basis? - We need to know this to be able to design search features in the UI.	The only info that is collected from the birds on a daily basis is which are seen and any body condition observations. I.e whether they are moulting, a juvenile has a beak that is turning red, yellowing feathers on the head, back or wings.
17. What information about birds do you need to see immediately before extracting any reports?	For the purposes of this system we just need the info extracted to be which birds attended the feeder and their associated information as previously discussed.
Elina Voitane (ev83) 06.12.2018	Debbie Fogell (djf41) 11.12.2018
18. Would you be able to tell a little bit about bird behaviour? When are they most active (day/night)? Is it important to show which hopper birds are visiting?	Active during the day, early mornings in particular. It is only important to differentiate between location and not the specific hoppers at that location. I.e if there are 3 hoppers in a single clearing we only need to know that the bird was present in the clearing. But we would like to know which clearing they attended (There are 4 set up in the breeding season).
19. Our idea is to show a live stream on the screen which will automatically update which birds visited hoppers. For example, when you are logged in you will have main screen showing bird ID, name, time of visit & Latest condition. We thought that it would be useful to see this information on daily report. If field staff realises that bird's condition has changes they can go and edit the main bird data. Please can you let me know if this is useful function or should this be ignored and only bird IDs, names and times are displayed? Or suggest	That sounds helpful. Yes. It would be good to have the condition comparison so that the team are able to keep a record of body condition frequently. They currently try to do this once a month but the option for a greater frequency is good.

what else could be added to live stream section?	
Elina Voitane (ev83) 18.01.2018	Debbie Fogell (djf41) 23.01.2018
20. Looking at the spreadsheet that you have sent us, please could you explain what is meant by: Date out & In Current population?	In current population I assume means whether the bird is still present but I don't think this actually differs from whether the bird is dead or alive. Date out I believe corresponds with the date of death or date last seen if the bird is assumed to no longer be present within the population. I think for the purposes of the report these fields are required (I would be reticent to remove anything in case it has a greater importance that I am not aware of) but for the purposes of the UI it doesn't need to be on display.
21. Do you need to be able to extract information about one certain bird or would you just filter out from the main report?	Being able to extract on a single bird would be handy but if it isn't easy to do then filtering a larger report is also fine.
22. I have attached document with User Interface prototype example. We have created two versions of how information should be displayed, please could you give us your opinion on which should work better for you and why?	Unhelpfully, I like both. If someone is displaying the data on their phone the single column with collapsible sections is more useful. But on a PC screen I prefer the grid layout. I think that a pc would be used the most frequently so I would lean towards the grid for only that reason. Could a field be added for when the most recent condition notes were taken? That way people can update this regularly and follow the chain as to how that progressed or degraded over time.
Elina Voitane (ev83) 24.01.2018	Debbie Fogell (djf41) 25.01.2018
23. In one of the previous emails you have mentioned that higher level staff can only export basic reports. Would you be able to specify what fields (from s/s that you have sent us) need to be on the report for higher level staff. Can higher level staff filter through fields before exporting or they are only allowed to see particular data? If so, what exactly they need to be able to export?	Higher level staff are technically allowed to view whatever they want to. I just figured that it might be easier for them to have access to fewer fields to make their report less complicated. However, it seems like it might just be easier to allow them to export data from whichever fields they want at the time, but not have the ability to edit the data. Might make your lives a bit simpler.

Elina Voitane (ev83) 21.02.2018	Debbie Fogell (djf41) 22.02.2018
24. For the export feature do you want filtering to just be available in excel or would you want the filtering done on the web page to carry over (e.g. if you are searching by male gender should the report only have that gender)?	excel filtering would always be there if I'm not mistaken, but yes this is what would mainly be used as we have in our giant sheet we use now. Filters carrying over would be nice but only if it's not too much trouble for you guys, I can't see it being used much and we can handle all of that in excel anyway.

1st February 2019 - UI Design Showing

- **Live View** - No auto refresh, instead show notification when new bird visits recorded
- **Bird View** - Table of past visits should only show date. No time needed
Condition and notes should be kept separate. Only recent condition should be visible, the history can be hidden. Notes do not need history, so can be changed/new information added. More Info and Parent sections should be switched around for easier information accessibility.
- **View Bird Table** - Basic filters at the top of table, more filters to be found in separate window.
- **Register New Nest Site** - Change button on the menu to manage nest sites. User should be able to register new nest site and manage all existing ones (view all nest sites and edit them). Nest site table should include: Name, Description, GPS Coordinates, Distance to hopper (kilometres with two decimal places), Current breeding pair Male & Female (just names, no ID required)
- **Manage Rings table** - Add two columns: Ring colour & Assignment date (when ring was assigned to bird)
- **User management** - When user edits information in the system - other users should not be able to edit at the same time. Add function to lock users out of the system when it is being edited and display who is editing information.
- **Poster info** - It is important that both logos (MWF & NPCS) are displayed together.
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21st February 2019 - System Showing

- System needs to have one user that has the highest level of privileges.
- Register new bird button at the top of Bird table.
- All Add New buttons to be moved at the top of the page.
- Export single bird - not required anymore
- Previous Nest Site to be changed to Previous Breeding Site
- User activity - would prefer to see old data that has been changed instead of new data. If possible display both. Only need to see one month of change logs
- Locking users out of system when someone is editing same page would be very helpful but not critical as there won't be many cases when system is used by more than one person at the time.