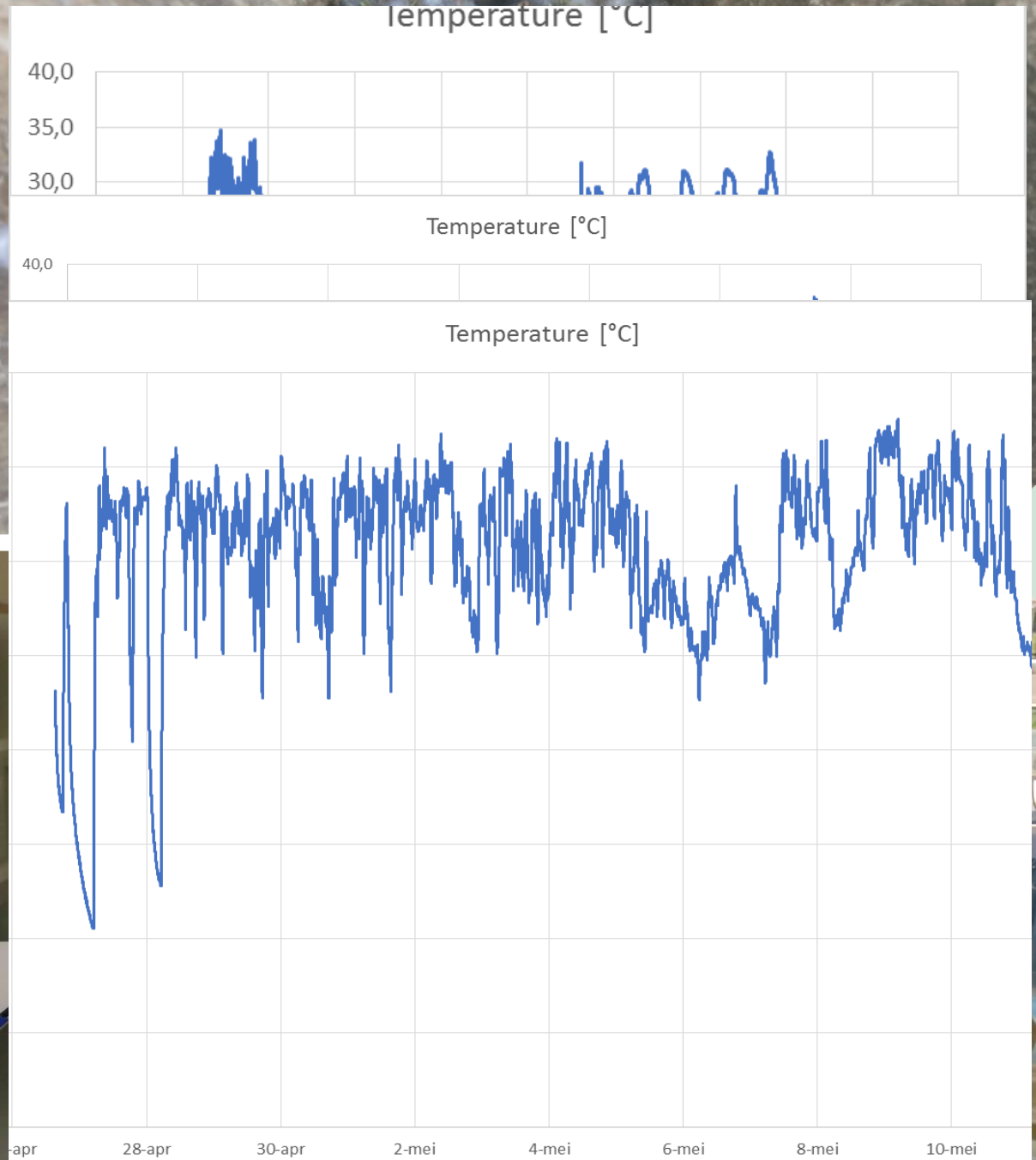
GOING DIGITAL: THE EGG-LOGGER PROJECT

AERES MBO BARNEVELD

2020 waterfowl conservation workshop

QUESTIONS

- Who thinks research is important?
- Who is currently involved in or contributing to some sort of research?
- Who wants to get involved in research with their own waterfowl?



Incubators mimic nature poorly.

Ventilation of the air pocket during natural incubation is higher than during artificial incubation.

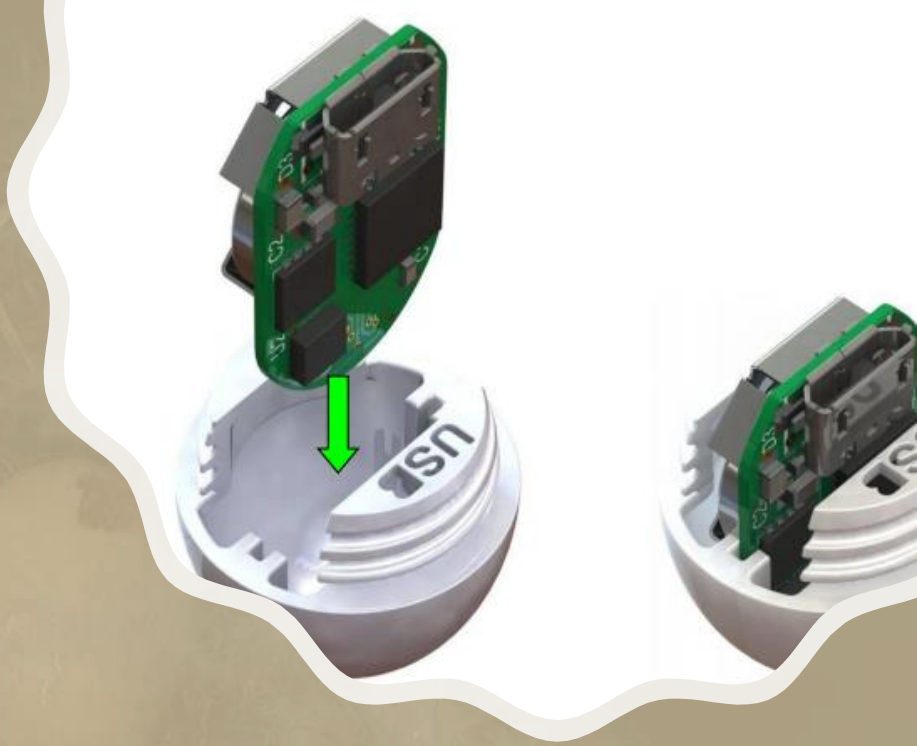
Outdoor temperature may be of influence (and therefore, climate change as well).

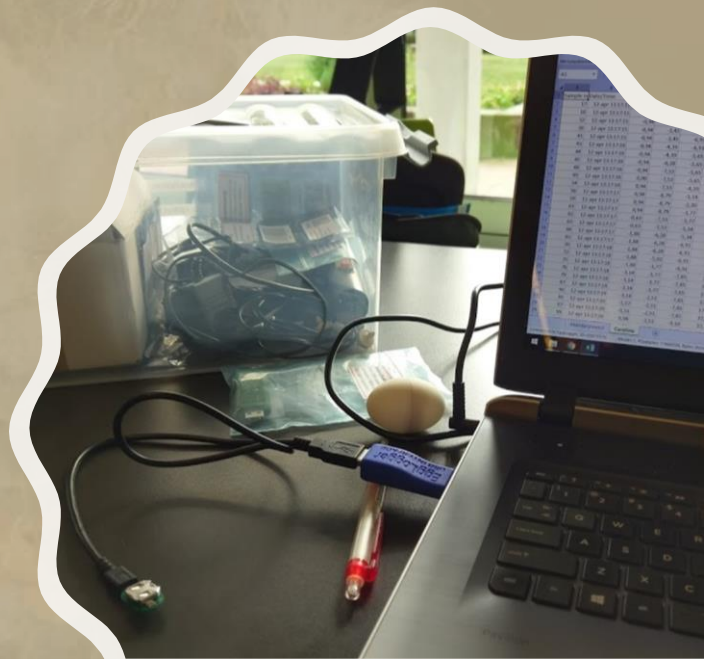
Follow-up:

- More nests per species.
- More Egg-loggers per nest.
- Research of the oxygen demand of the embryo.

WHAT IS AN EGG-LOGGER?

- Small electronic device that senses the turning and temperature of an egg in a bird's nest.
- Device stored in a 3D-printed egg that replicates the real-life bird egg.
- Long-lasting (3 months) small button-cell battery.
- Internal storage for up to a few months.
- Connect to computer by USB interface.





HOW TO LOGGER

- Collect data wit
  your choice.
- Connect the log
  the USB interface
- Extract the data
  the Egg-logger c

	A	B	C	D	E	F	G	H	I
1	Sample number	Date/Time	xAcc [m/s^2]	yAcc [m/s^2]	zAcc [m/s^2]	Temperature [°C]	Roll [deg]	Pitch [deg]	Vbattery [V]
2	17	12-apr 13:17:13	-0,94	-4,39	-7,85	37,6	-150,8	-6,0	3,82
3	18	12-apr 13:17:13	-0,94	-4,39	-7,85	37,6	-150,8	-6,0	3,82
4	32	12-apr 13:17:15	-0,94	-4,39	-7,85	37,5	-150,8	-6,0	3,82
5	38	12-apr 13:17:15	-0,94	-3,45	-7,85	37,5	-156,3	-6,3	3,82
6	41	12-apr 13:17:15	-0,94	-3,45	-6,91	37,5	-153,4	-7,0	3,82
7	43	12-apr 13:17:16	-0,94	-4,39	-6,91	37,5	-147,5	-6,6	3,82
8	44	12-apr 13:17:16	-0,94	-4,39	-5,65	37,5	-142,1	-7,5	3,82
9	45	12-apr 13:17:16	-0,94	-6,28	-5,65	37,5	-132,0	-6,4	3,82
10	48	12-apr 13:17:16	-0,94	-7,53	-5,65	37,5	-126,9	-5,7	3,82
11	49	12-apr 13:17:16	0,00	-7,53	-5,65	37,5	-126,9	0,0	3,82
12	54	12-apr 13:17:16	0,94	-7,53	-4,39	37,5	-120,3	6,2	3,82
13	56	12-apr 13:17:17	0,94	-8,79	-3,14	37,5	-109,7	5,8	3,82
14	59	12-apr 13:17:17	0,94	-8,79	-2,20	37,5	-104,0	5,9	3,82
15	61	12-apr 13:17:17	0,94	-8,79	-3,77	37,5	-113,2	5,6	3,82
16	62	12-apr 13:17:17	-0,63	-7,53	-3,77	37,5	-116,6	-4,3	3,82
17	63	12-apr 13:17:17	-0,63	-7,53	-5,34	37,5	-125,3	-3,9	3,82
18	64	12-apr 13:17:17	-1,88	-6,28	-5,34	37,5	-130,4	-12,9	3,82
19	65	12-apr 13:17:17	-1,88	-6,28	-6,91	37,5	-137,7	-11,4	3,82
20	70	12-apr 13:17:18	-1,88	-6,28	-6,91	37,4	-137,7	-11,4	3,82
21	72	12-apr 13:17:18	-1,88	-5,02	-6,91	37,4	-144,0	-12,4	3,82
22	75	12-apr 13:17:18	-1,88	-3,77	-6,91	37,4	-151,4	-13,5	3,82
23	76	12-apr 13:17:18	-3,14	-3,77	-7,85	37,4	-154,4	-19,8	3,82
24	79	12-apr 13:17:18	-3,14	-3,77	-7,85	37,3	-154,4	-19,8	3,82
25	87	12-apr 13:17:19	-3,14	-3,77	-7,85	37,1	-154,4	-19,8	3,82
26	90	12-apr 13:17:19	-3,14	-2,51	-7,85	37,1	-162,3	-20,9	3,82
27	95	12-apr 13:17:20	-1,57	-2,51	-7,85	37,1	-162,3	-10,8	3,82
28	97	12-apr 13:17:20	-0,31	-2,51	-7,85	37,1	-162,3	-2,2	3,82
29	99	12-apr 13:17:20	0,94	-2,51	-9,10	37,1	-164,6	5,7	3,82

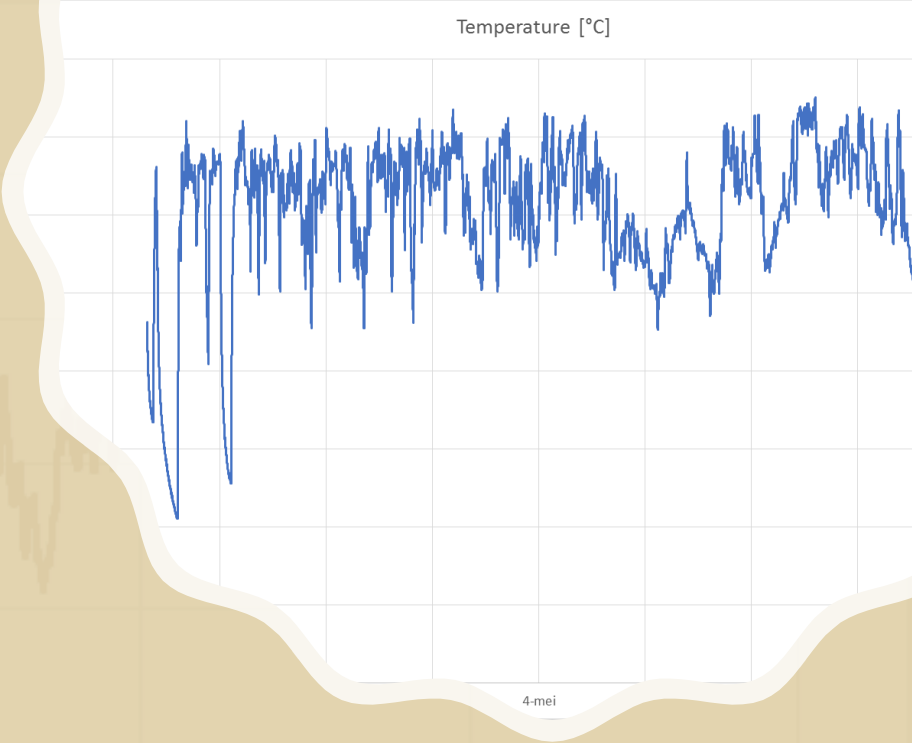
WHAT CAN IT BE USED FOR?

Three main ways egg-logger data can be useful:

- Development of artificial incubation technology.
- Better understanding of breeding certain species.
- Contributing to conservation.

ARTIFICIAL INCUBATION

- Most incubators create a static environment with as little fluctuation as possible.
- Does temperature fluctuation benefit unhatched chicks by influencing the exchange of oxygen?
- Should temperature fluctuation be incorporated into incubators?



BREEDING

- Possibility to increase the knowledge of how to (artificially) breed certain species of birds.
- Better insight in the brooding habits.
- May make it easier to breed with species that are hard to keep and reproduce in captivity.

CONSERVATION

- Knowledge about brooding habits may be able to play an important role in ex-situ and in-situ conservation.
- More successful clutches can help to rapidly increase population numbers.


WHO WANTS TO GET INVOLVED?


GO DIGITAL WITH US
SEE YOU AT THE EGGLOGGER WORKSHOP WITH DOUWE ALGRA
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