

13 years of Aquila dataloggers



The Third International Scientific and Practical Conference "Eagles of the Palearctic: Study and Conservation"

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Almaty, Kazakhstan



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- Company started in 2006
- First scientific project in 2010
- First datalogger project in 2011
- First GPS/GSM datalogger in 2012
- 26 bird species tagged so far

Standard features



Weight: from 14g

Power: solar charged batteries

Communication: GSM/GPRS

Data collection type: coordinates, altitude, speed,...

Data collection frequency: every 3 minutes during
daytimes...

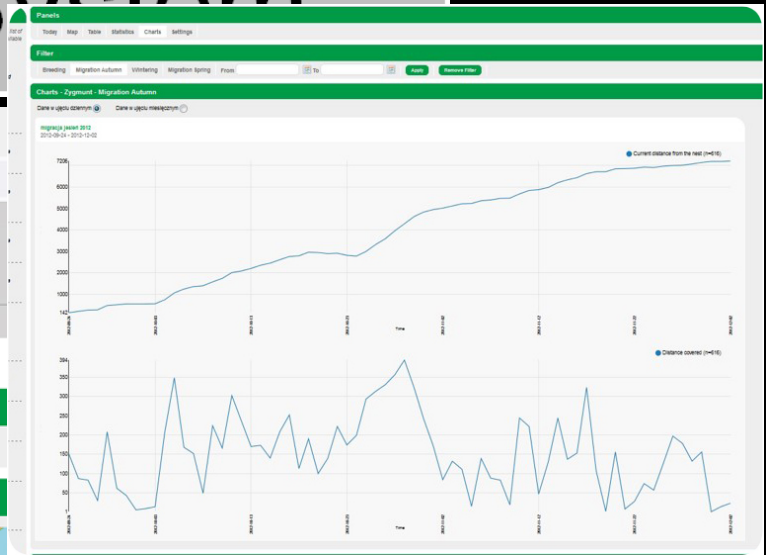
Data transfer frequency: every 3 minutes

Night mode

Remote configuration



AquilaSystem



Tracking

https://gps.aquila-it.pl/en/tracking

Panels

Today | Map | Table | Statistics | Charts | Settings

Filter

Breeding | Migration Autumn | Wintering | Migration Spring | From: []

Statistics - Zygmunt - Migration Autumn

migracja jesień 2012
2012-09-24 - 2012-12-02

Current distance from the nest (n=): 7206.07 km
 Distance covered (n=615): 10481.77 km
 Average altitude (n=0): 0 m
 Top altitude (n=0): 0 m
 Average daily/monthly distance (n=616): 149.74 / 2620.44 km
 Top distance covered (n=616): 119.6 km
 Top speed (datalogger) (n=0): 0 km/h
 Top speed (map) (n=615): 71 km/h
 Average speed (datalogger) (n=0): 0 km/h
 Average speed (map) (n=615): 6.31 km/h



Global GIS Wizard - Aquila003

Data in numbers

Aquila003	jęgowisko 2014	2014-03-29 11:41:00	2014-09-22 11:16:47	710 km	n=8
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Minimalny poligon: 710 km
 Maksymalny poligon: 710 km
 Średnia z poligonów: 0 km

Previous

- Project: AQH Казахстан
- Project: AQH Ульяновск
- Project: AQN Kazakhstan
- Project: AQN Oman
- Project: AQN Russia/Hungary
- Project: AQP Estonia
- Project: Aquila nipalensis
- Project: BRCC Казахстан
 - Species: Eastern Imperial Eagle

AquilaSystem Benefits



Comprehensive
analysis tool

Cost effectiveness

Analysis based on
latest data

Individual/species
comparison module

Multilingual
interface

Tagged species

*Vultur
gryphus*

*Gypaetus
barbatus*

Gyps ruepelli

*Aegypius
monachus*

*Neophron
percnopterus*

*Haliaeetus
albicilla*

Aquila clanga

*Aquila clanga
x pomarina*

*Aquila
pomarina*

*Aquila
chrysaetos*

Aquila heliaca

*Aquila
nipalensis*

*Aquila
fasciata*

*Pandion
haliaetus*

Milvus milvus

*Milvus
migrans*

Buteo buteo

*Circaetus
galicus*

*Accipiter
gentilis*

Bubo bubo

*Pelecanus
crispus*

*Grus
leucogeranus*

*Ciconia
ciconia*

Ciconia nigra

*Anser
albifrons*

Tetrao tetrix



Are Aquila loggers reliable



- Random projects from eastern Europe/Central Asia
- Loggers actively searched for within the project
- Only known cases taken into account
- Freshly fitted loggers (2022-2023) not included, as most of them operate and logger operating for 2 years is not a success anymore
- Mortality cause is not an issue



Numbers



Start	Quantity	Operate	Stopped	Death confirmed	Probable death	Logger stopped confirmed
2019	11	4	7	5	1	0
2017	38	17	21	9	6	1
2018	5	2	3	1	1	0
2019	6	2	4	0	1	0
2018	3	0	3	1	0	0
2017	4	0	4	4	0	0
2017	44	22	22	8	7	0
Total	111	47	64	28	16	1



Results



42,34% of loggers still operate
67,57% including confirmed bird death
81,98% including probable bird death
1 logger confirmed not working anymore (6
years), the bird is fine.

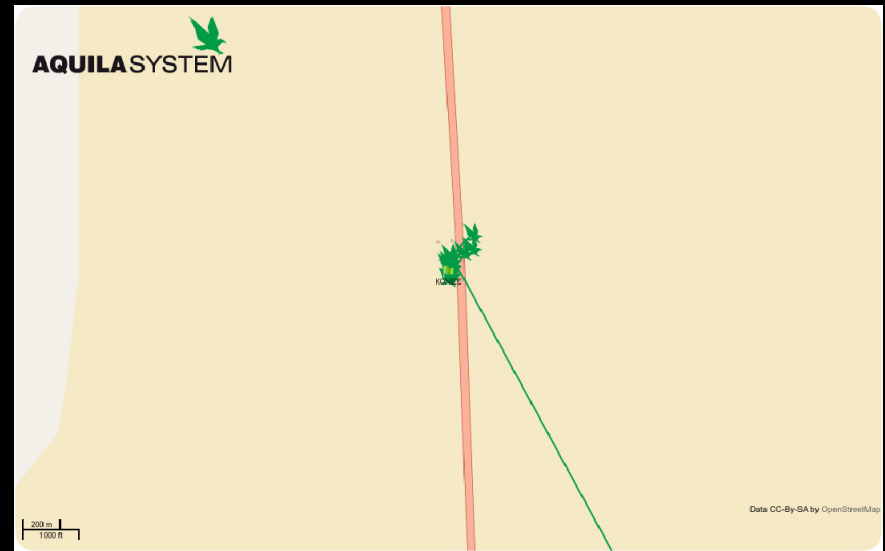
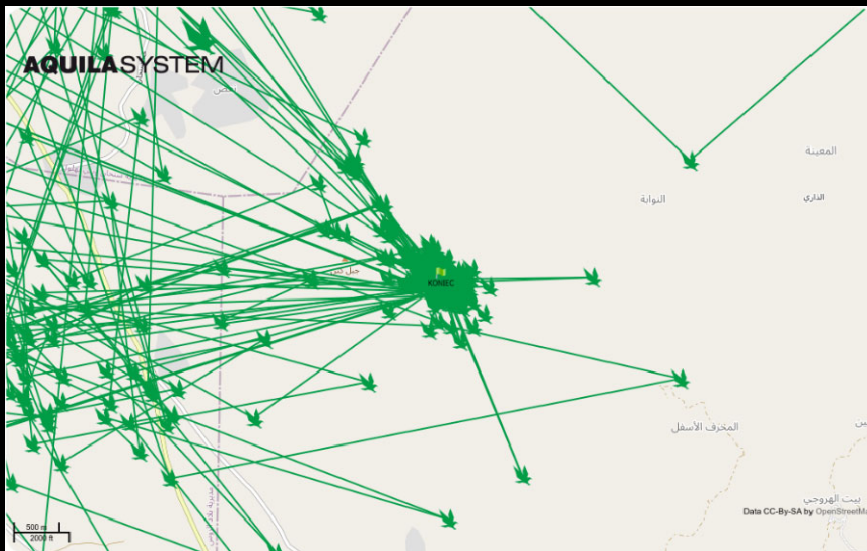
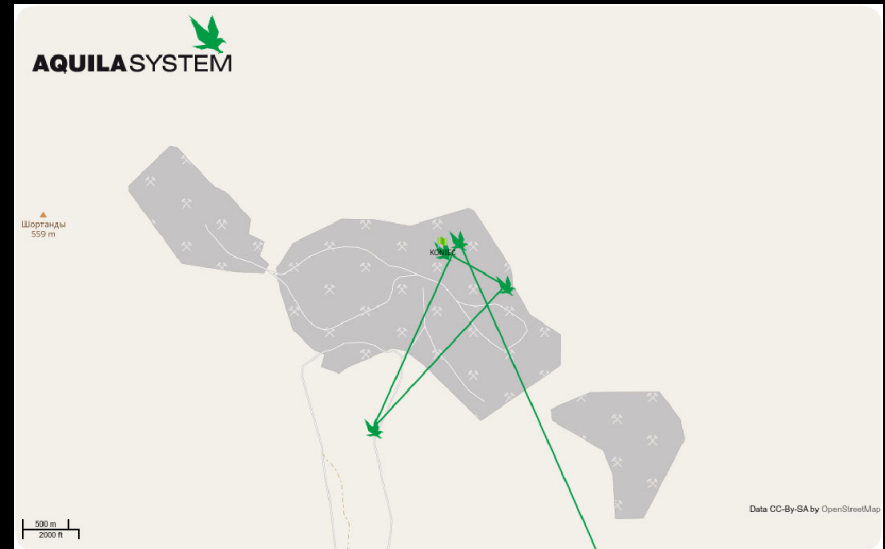
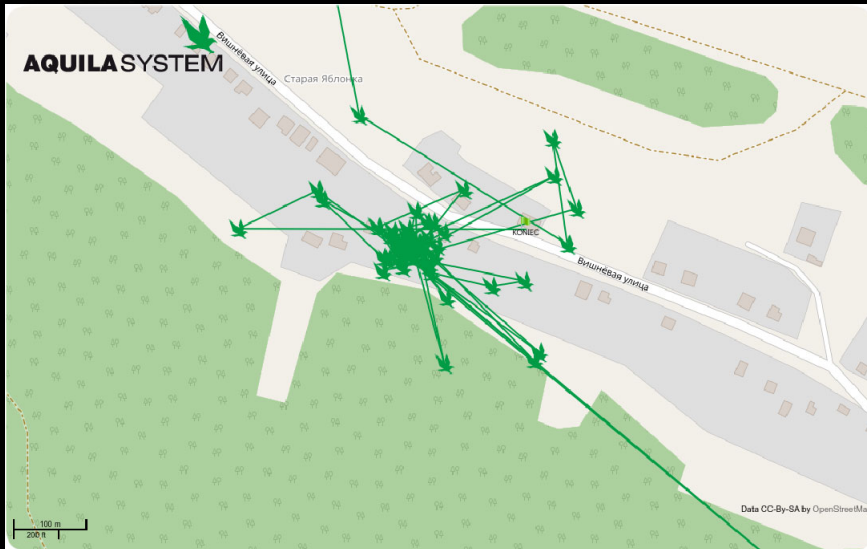
Remark 1: Loggers have no extra „mortality sensor/procedure“

Remark 2: Low density of gsm towers

Other death signs (marked as „probable“)

1. Multiple fixes within small area
2. Few fixes, but close to human settlements/infrastructure (roads, power lines, industry, wind farms)
3. No data from logger, but info „bird with logger/ring on the market“, „captured by CIA/FBI“, etc.

Other death signs, examples





Spectacular logger recoveries



1. GSE from Biebrza
 - logger stopped working in early autumn
 - next spring found with broken chassis in a forest
 - set under the sun started working
2. Imperial Eagle in Russia:
 - logger stopped working in autumn,
 - layed whole winter under snow,
 - started transmitting in spring – bird electrocuted
3. Steppe Eagle in Kazakhstan:
 - at spring data from one location, then silence
 - next spring logger started sending data and was collected

Steppe Eagle Russia/Kazakhstan

Map showing migration tracks for various birds across Eurasia. The legend includes:

- Show All Hide All
- Aman
 - Aman 2018
 - Aman 2019
 - Aman 2020
 - Aman 2021
 - Aman 2022
 - Aman 2023
- Ayna
 - Ayna 2018
 - Ayna 2019
 - Ayna 2020
 - Ayna 2021
 - Ayna 2022
 - Ayna 2023
- Ita
 - Ita 2019
 - Ita 2020 R.I.P.
- Jeanne
 - Jeanne 2019
 - Jeanne 2020
 - Jeanne 2021
 - Jeanne 2022
 - Jeanne 2023
- Kenjik
 - Kenjik 2018
 - Kenjik 2019
 - Kenjik 2020

Partners and sponsors of the project:

<https://gps.aquila-it.pl>

<https://egyptianvultureoman.blogspot.com>

<http://rrrcn.ru/en/migration/se2018>

<http://rrrcn.ru/en/migration/ev-eie2022>

Live bird tracking



Aquila loggers

Benefits





Aquila loggers Benefits





Aquila loggers

Benefits





13 years of Aquila dataloggers



„Loggers of „x“ freeze.

Loggers of „y“ freeze.

„z“ loggers stop working as well.

But Aquila loggers work. I checked,
it was **minus 40 degrees Celsius** at
that time there.

How do you manage that???

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Назарларыңызға
рахмет!



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Photos: Nirav Bhatt, Urmaz Sellis, Maksim
Perkovskij (Astrakhanskij Biosfernij
Zapovednik), Mikhail Korepov