Argos based applications for real time wildlife monitoring in Romania (BioMoveFix)

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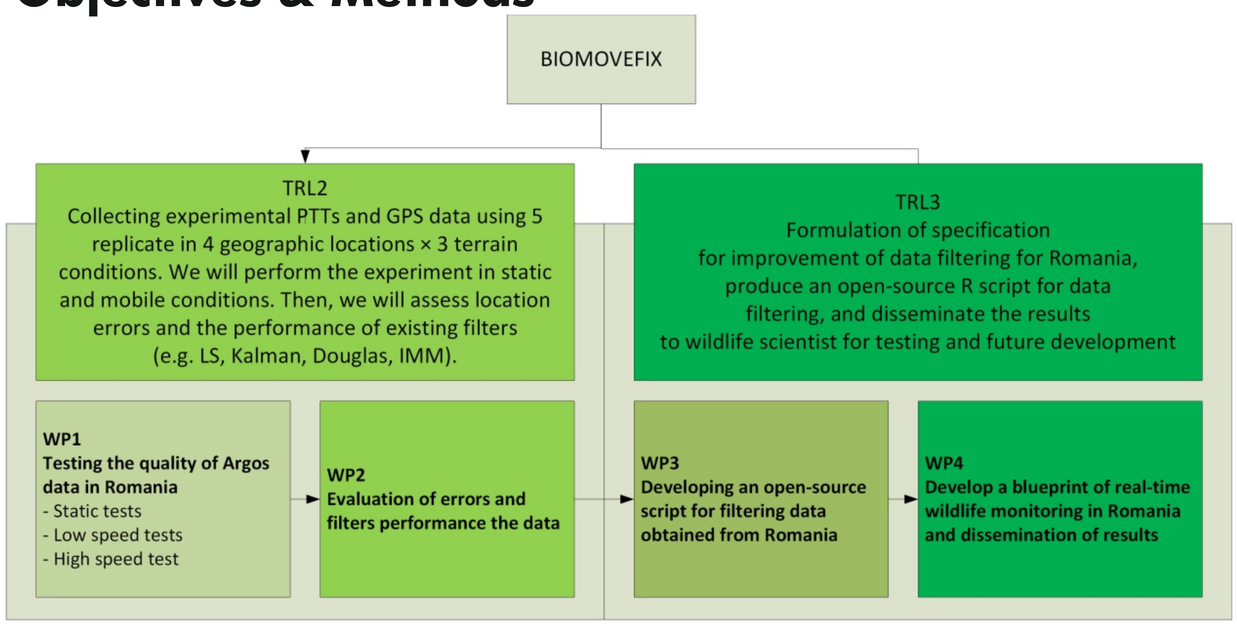
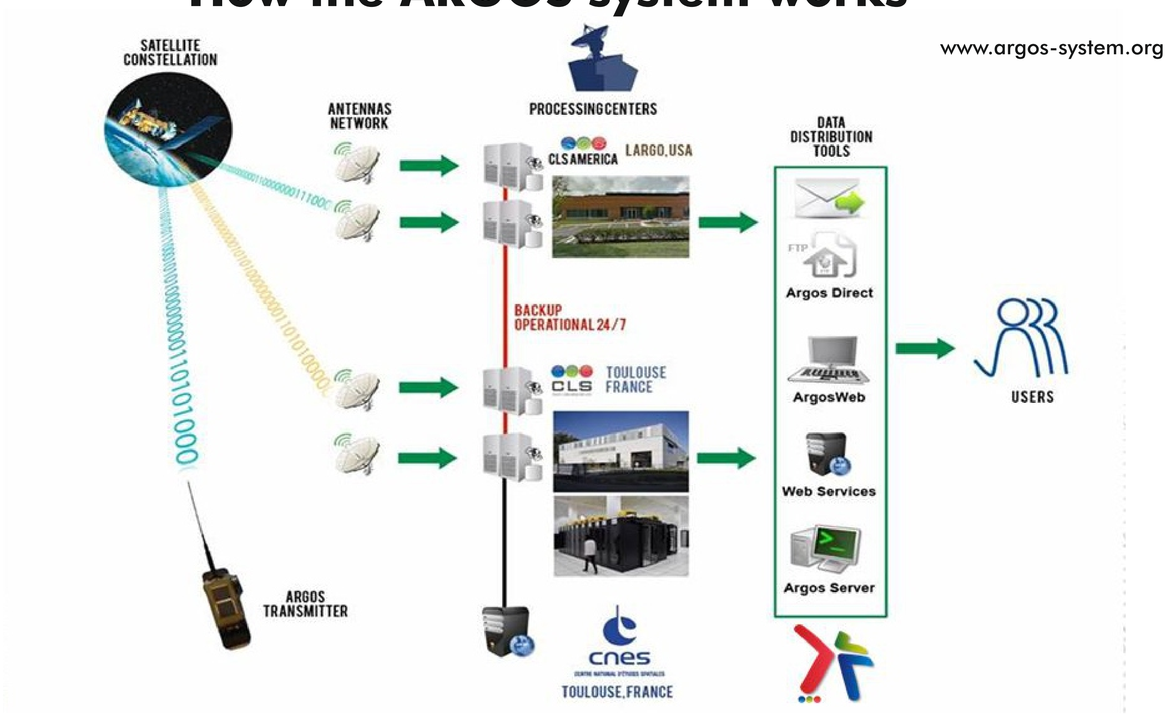
Introduction

Collecting quality data for conservation activities by means of tracking animals is a challenging task (White & Garrott 1990; Turchin 2015), since monitoring transmitters have to be protected from the environment, and animal aggression, must be appropriately sized to the animal monitored, and include a long lasting battery or alternative power source. Communication between devices and remote satellites is dependent on many unknown conditions encountered by the animals and their habitats (e.g. speed, terrain fragmentation). By our study we will develop more appropriate tools for solar PTT Argos devices by providing enhanced statistical tools and improved guidelines whereby these devices will match most wildlife species.

Objectives & Methods



How the ARGOS system works



Results

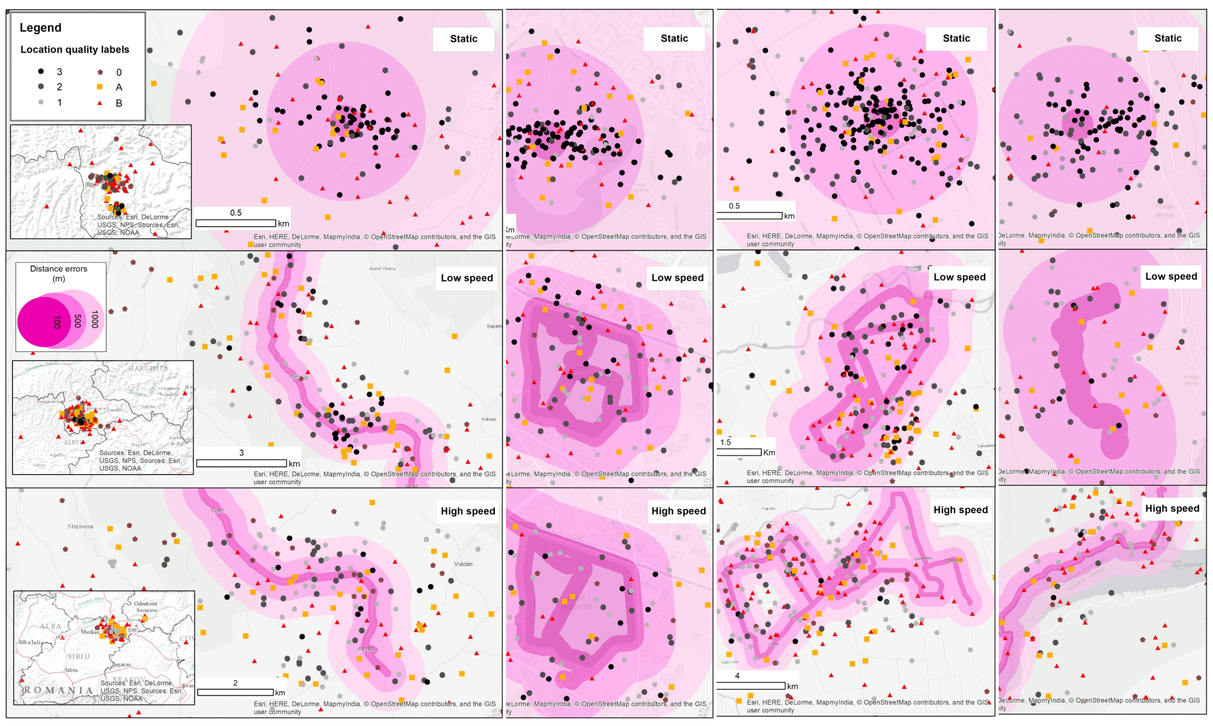


Fig.2 Location errors of Argos tested in static, low speed and high speed

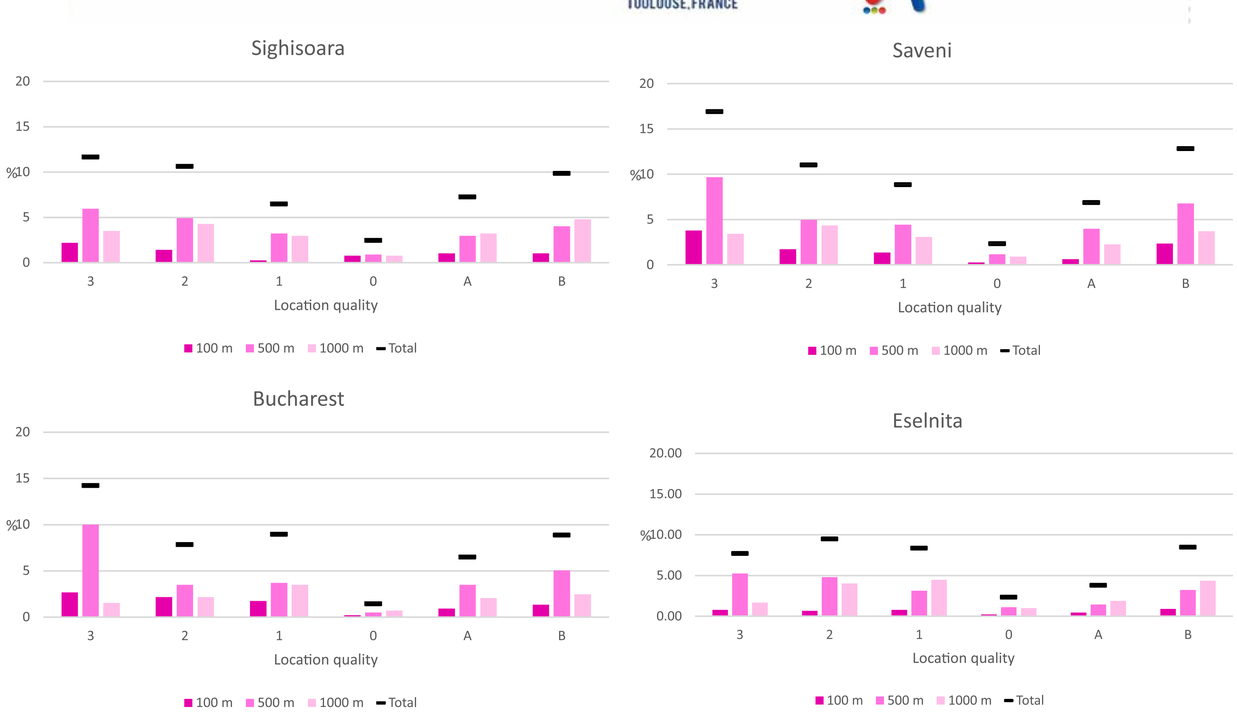


Fig. 3 Argos location categories obtained for the 4 geographic locations & 3 terrain conditions in Romania

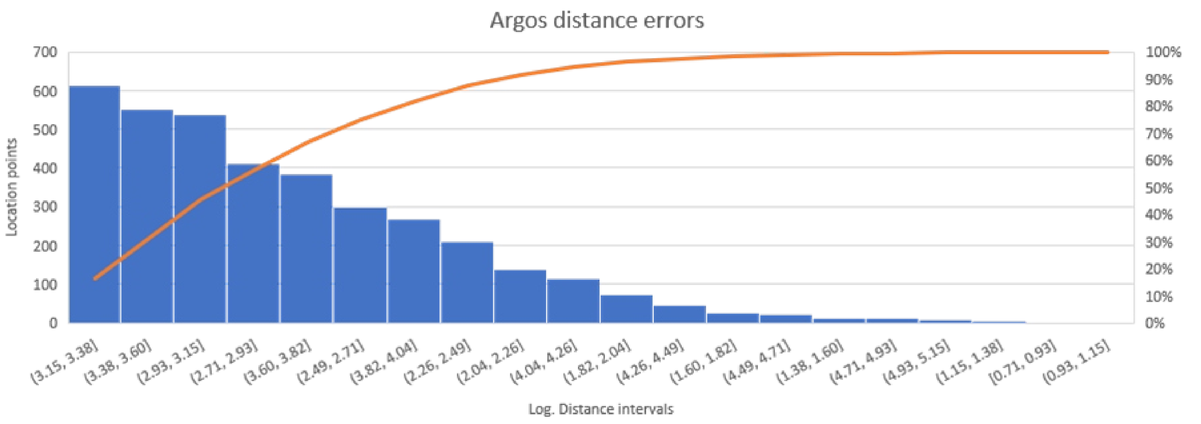


Fig. 4 Argos distance errors by different types of movement and for the individual locations

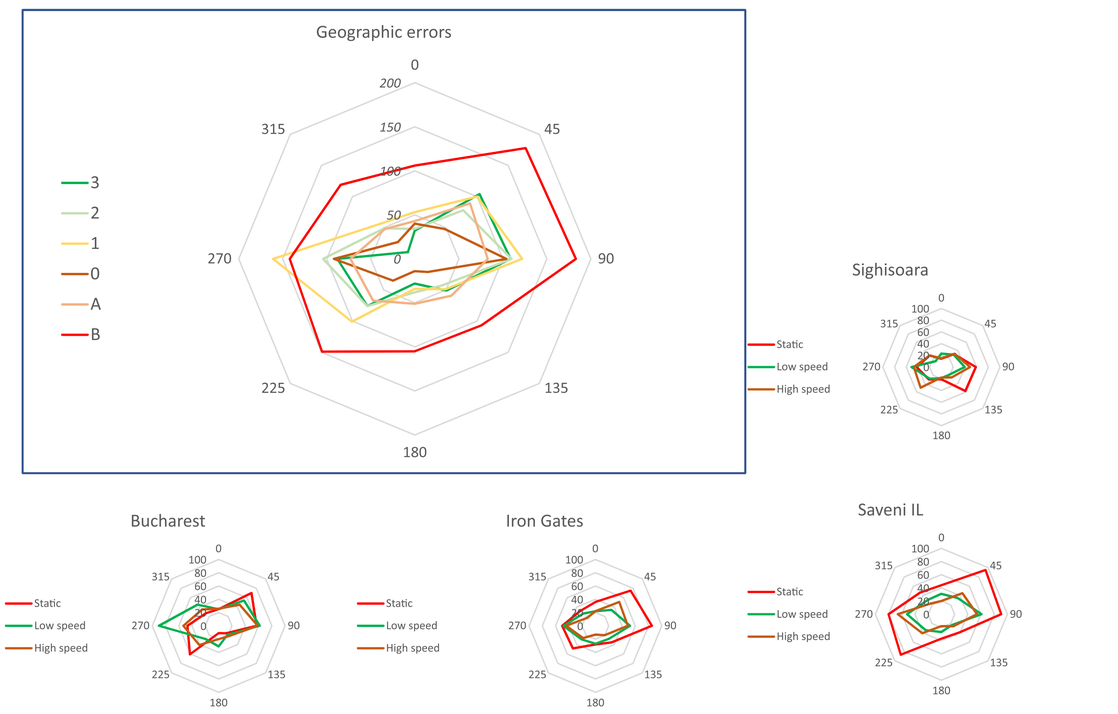


Fig. 5 Radial histogram of geographic errors by types of location class and for each site

Bucharest

Static			Low speed			High speed		
Min	Avg.	Max.	Min	Avg.	Max	Min	Avg.	Max
5.11	1837.88	32346.84	64.49	4598.23	115743.94	113.23	3335.70	51185.58

Saveni

Static			Low speed			High speed		
Min	Avg.	Max.	Min	Avg.	Max	Min	Avg.	Max
13.08	2103.77	51185.58	68.50	3330.10	84451.34	90.75	4721.08	52483.56

Sighisoara

Static			Low speed			High speed		
Min	Avg.	Max.	Min	Avg.	Max	Min	Avg.	Max
24.66	2260.32	17193.31	3129.21	3129.21	53760.15	122.30	4983.63	101319.91

Iron Gates

Static			Low speed			High speed		
Min	Avg.	Max.	Min	Avg.	Max	Min	Avg.	Max
23.86	4933.13	142516.98	118.39	3733.55	66317.29	236.74	5384.29	64462.14

Distance Errors (m)

	Min	Avg.	Max
Static	5.11	2808.573	142517
Low speed	26.50	3779.736	115743.9
High speed	90.75	4550.151	101319.9

Conclusions

- Using Argos to track individuals can reveal behaviour patterns that could be extrapolated to the entire species, thus, improving the conservation measures for the monitored species and its habitat.
- Testing the location accuracy of Argos data in Romania helps developing a suited filter for Argos locations, being useful for species monitoring in the future.
- This research could develop future studies in the field of movement ecology, enhancing the need of collaboration among different experts teams in regard of habitat and species. conservation.

References

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Acknowledgments

This work was supported by a grant of Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), PN-III-P2-2.1-PED-2016-0568.