THE DRONES, A MODERN INNOVATION IMPACTTING AREAS OF THE SITE NATURA 2000 ROSCI0128 NORTH EASTERN GORJ

Oliviu-Mihnea Gamulescu, University of Petrosani, Petrosani, ROMANIA

Marius-Nicolae Risteiu, University of Petrosani, Petrosani, ROMANIA

Roxana –Gabriela Popa, University Constantin Br*âncuşi of Târgu Jiu, ROMANIA*

Abstract: The objective of this paper was to develop a research to find out solutions to the problems we face in the protection of the environment, animal health and welfare solutions made important by new technologies. Collecting images using drones, have to assess the environment with improved performance offered by a new field of activity that provides very interesting results in the research work that can be implemented in potential applications in various technologies in real world.

Key-Words: drone, photo, area

1. INTRODUCTION

In the range July to September 2016, we conducted several experiments using a drone Parrot Bepop type as part of the mission to study and protect the environment for future generations.

The main issues raised by the observation in front of the researcher are: what we see (content observation), What are the forms of observation (occasional, systematic, continuous, discontinuous, full, selective, direct, indirect), what influences the quality of the submissions, which are conditions a good observations, as can be removed certain obstacles observation, what are the advantages and limits of observation.

For example, a good observation conditions refer to:

1. establish clearly the scope, objective research;
2. selecting optimal observation forms;
3. selecting the conditions and means necessary;
4. develop a plan rigorous observation (a conceptual system and the assumptions on which it will go);
5. establishment strictly the place and time of execution;
6. immediate recording of the observed;
7. conducting an adequate number of observations;
8. control choosing benchmarks and ways of assessment observations made etc.

Studies have shown that cattle are an essential component for maintaining healthy pastures. However, the way farms are managed is really critical.

The vulnerability of the site is given by the following factors:

- is partly inappropriate mowing and grazing periods;
- small portions of land are continuously introduced into agriculture destroying the original vegetation cover
- is affected by erosion;

This site is important for species of flora and fauna rare, vulnerable and protected by national and European level.

2 . PROBLEM FORMULATION

To collect data on the impact on the environment grazing practices we identified several permanent pastures and farmers in Baia de Fier, Gorj County. Fields selected were chosen in a random manner on a small area.

They were identical same soil type and microclimate, but different methods of using high value permanent pastures used both by mowing and grazing.

To fly over the fields with a Parrot drone type Bepop to collect images visible from very high resolution, the drone is equipped with a camera producer of "Fisheye" lens 180 1 / 2.3 "6 optics and 14 mega pixel sensor.

The drone is equipped with a flow sensor optical camera stabilization vertical (every 16 milliseconds, an image of the ground is taken and compared with the previous one to determine the speed of Bebop Drone), ultrasound sensor (Analyze flight altitude up 8 meters), pressure sensor (MS 5607).

GPS coordinates of ground sections were carefully recorded for comparison with georeferenced images taken by the drone, the device is set to approx. 40 m altitude, as shown in the image in Fig. 1.

Studies have been conducted on high value grasslands maintenance, which realize both mowing and grazing. A hypothesis test field is that data high-resolution aerial can be used to assess the health of the animals, which are conditioned by the quality of food without doing an operation costly and time consuming conducted on the ground in each area. Details are still being analyzed, but first results are encouraging.

Figure 1. GPS coordinates of the ramp sections

3 . SOLUTION

In Fig 2, is observed a wrong agricultural activity in terms of ecosystem protection, since it conducted a overgrazing.

Overgrazing by definition "is a phenomenon of destruction of the vegetation in an ecosystem as a result of the intensive Grazing by herbivorous animals. Overgrazing can be defined as a pastor of a large number of herbivorous animals (domestic and wild) for a long time on the ground unable to reconstruct the vegetation, or shepherd the animals grazing on land (eg. The slopes) are not adapted for grazing, due to physical parameters. Overgrazing often leads to soil erosion, destruction of vegetation,

desertification and other problems associated with these processes.

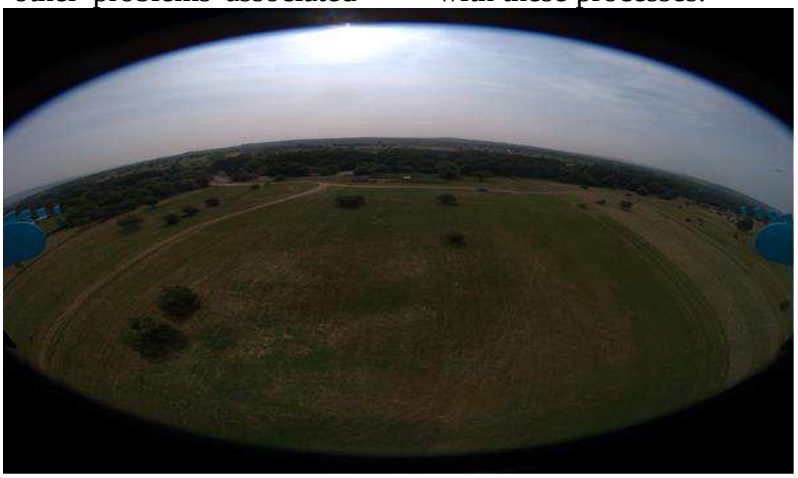

Figure 2. Overgrazing land

Figure 3. Images captured with a digital camera

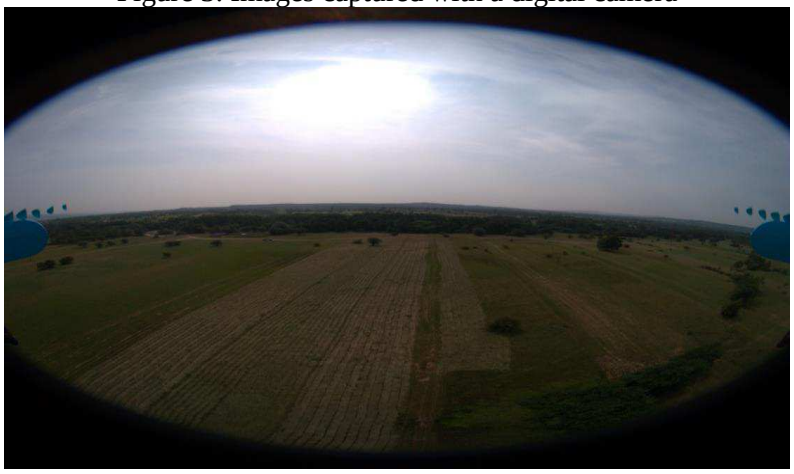

Figure 4. Images captured with the drone

In figure 3, the images were captured with a digital camera. At first glance it might say that might not be identifiable problems on permanent grassland grazing on a high value,

but comparing with Figure 4. the image taken using drones, we can identify the exact consequences and impact on the environment.
It can be seen in the image collected using drone, how farmers operates differently so how is done mowing, and grazing on the same soil types.

4 . SWOT ANALYSIS

To get an overview idea of implementing a new opportunities based on innovation and technology, we tried to realize a SWOT analysis on the use of drones that monitor and may have an impact on the environment.
In the European Union we have conducted research for using drones to monitor the use of subsidies to farmers, which according to Community law must be inspected annually at least 5% of the areas planted with these funds.
If these inspections were initially carried out by authorized personnel, more countries have turned to satellite imagery to check whether farmers qualify for subsidies and then if you use them according to set conditions. Satellite inspections are 3 times cheaper than those made on-site inspectors so that in 2010 over 70% of checks were made using images captured by satellites. They can sometimes be misleading, however, while being difficult to obtain in countries with generally unfavorable weather.

With a drone can obtain important information in real time, where you can download images directly to smartphones.

5. CONCLUSIONS

The drones used in agriculture will have significant and long-term future technology, they need to be upgraded with additional devices to gather more information, such as thermal sensors to identify early signs of stress in plants that They can later be rolled analyzed and used by farmers.
The use of drones in agriculture and help a lot that can be monitored areas and perimeters with difficult access to specialized inspectors and for that you can watch wild animals in their natural ecosystem without being cheerful of human presence.

REFERENCES

[1]http://www.descopera.ro/stiinta/9249085-drona-ochiul-din-cer-care-vede-tot
[2] FAO. Définition du surpâturage
[3]Petre Neacșu, Zoe Apostolache-Stoicescu. Dicționar de ecologie. Editura științifică și enciclopedică, București, 1982.
[4]http://www.referatele.com/geografie/PRINCIPII-SI-METODE-IN-ANALIZA436.php