

Can drones make botanical field work easier? Short examples

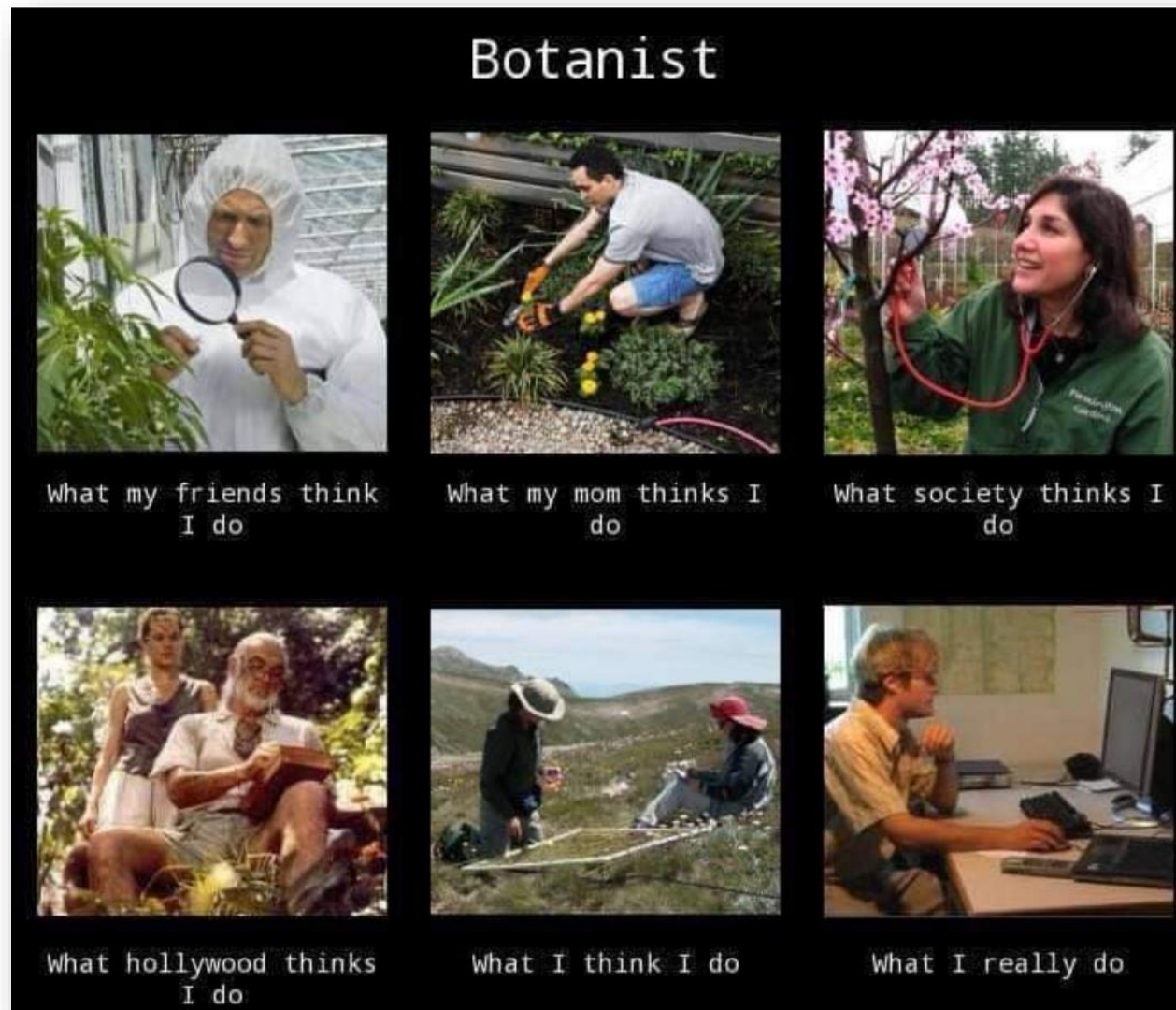


Nevėžis river, Krekenava regional park

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Investigations of the Status of Invasive and Alien Species in Lithuania” (Contract No. 05.5.1-APVA-V-018-01-0012)

What does a field botanist look like at work?



<https://www.facebook.com/search/top?q=science%20humor>

Our equipment



dji mavic pro

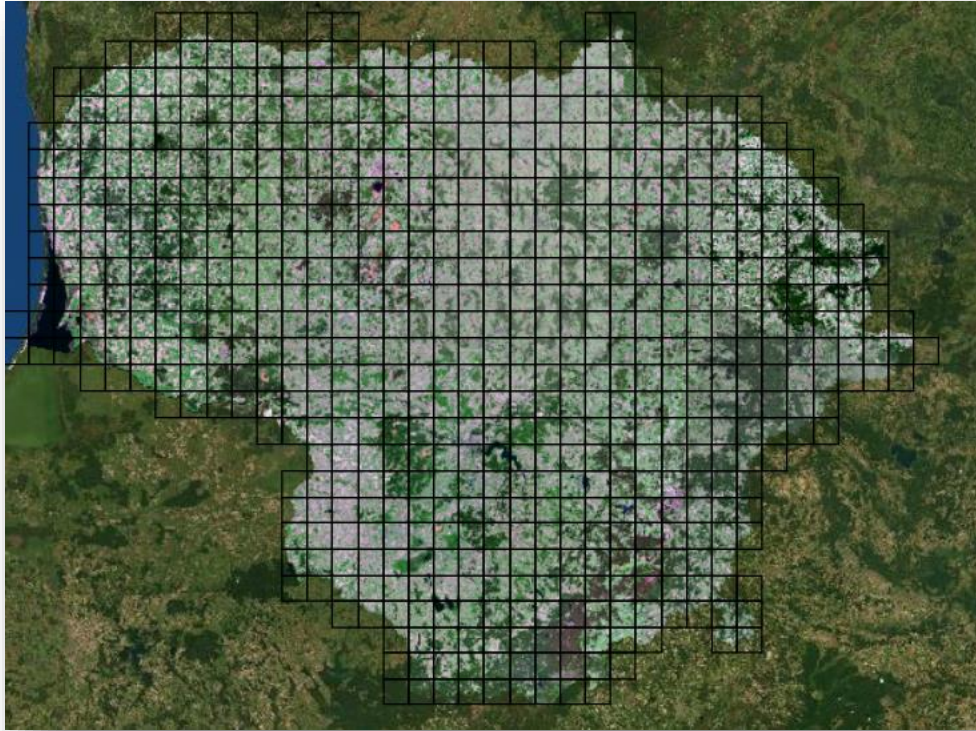


dji mavic 2 zoom

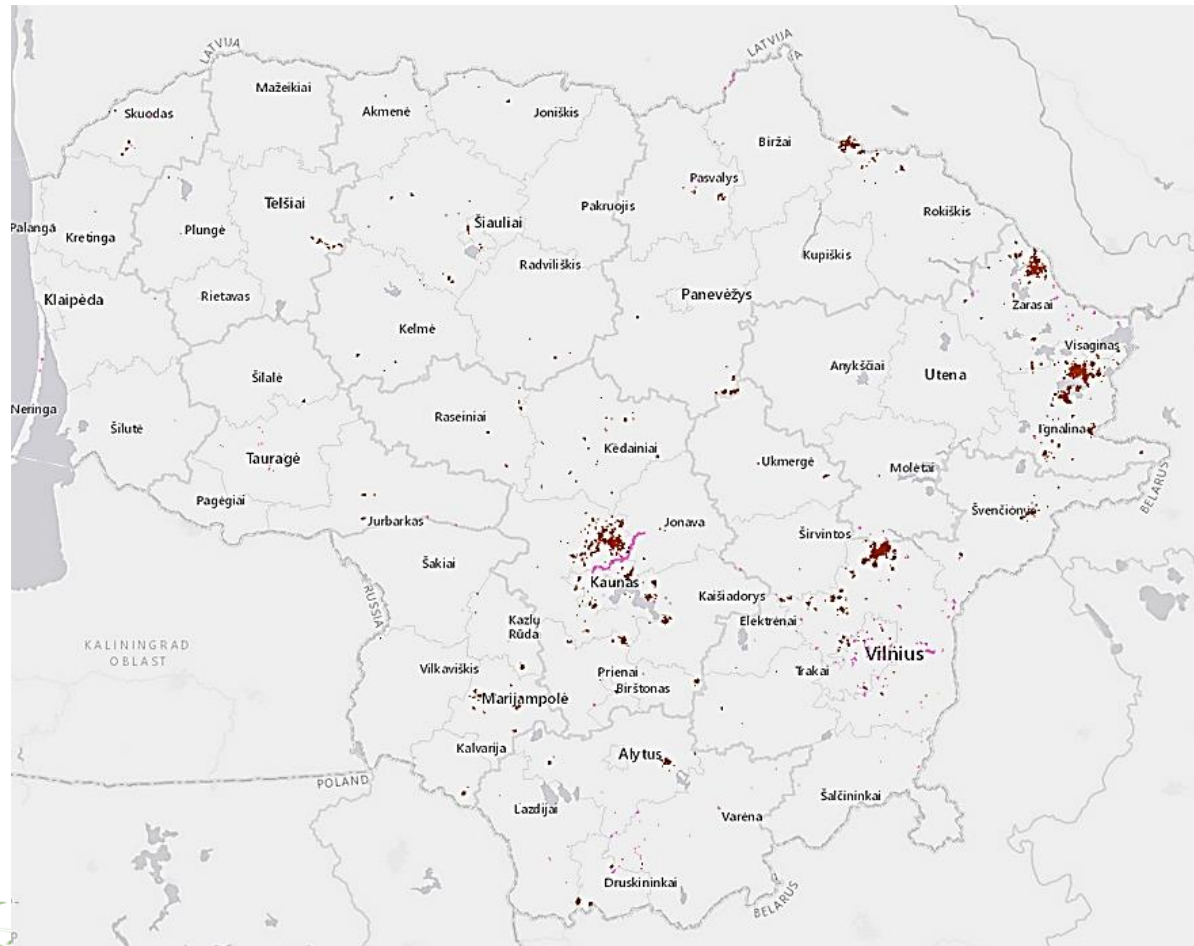


**UAV Birdie + parrot
sequoia**

Precise mapping of *Asclepias syriaca*, *Impatiens glandulifera* and *Heracleum sosnowskyi*



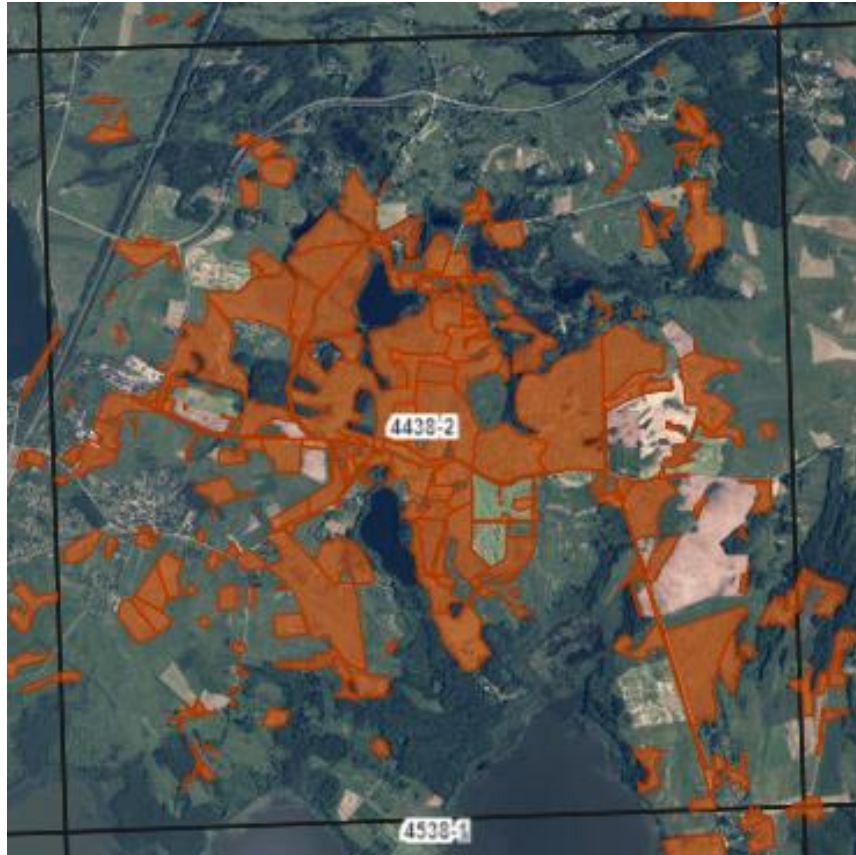
Precise mapping results of *Heracleum sosnowskyi*



Area of *Hera sos* more than **15 000 ha**



The most invaded areas in Lithuania



4438 grid cell (approx. 10 x 10 km): 2445 ha
Fig. 4438-2 subcell (approx. 5 x 5 km)



4932 grid cell (approx 10 x 10 km): 2092 ha
Fig 4932-2 subcell (approx. 5 x 5 km)

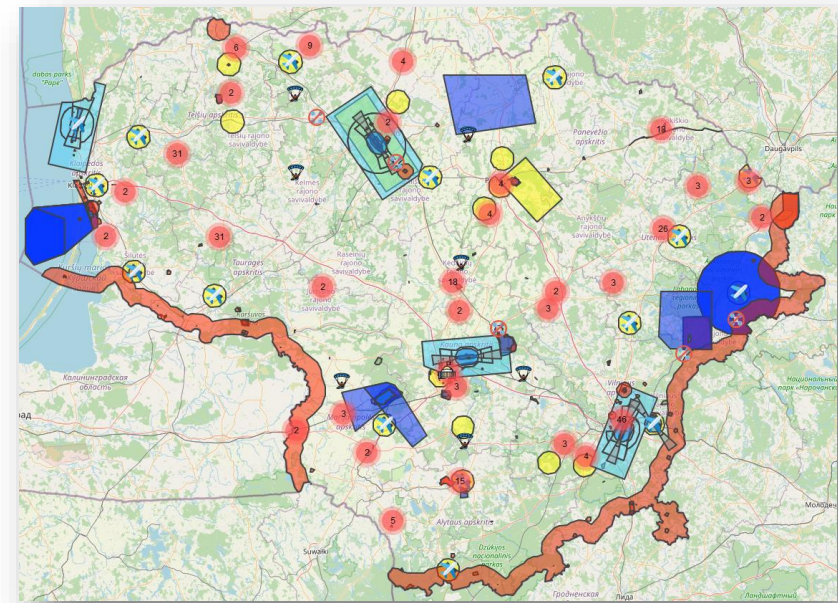
How much resources did we use?

- 2 pilots, worked only in hot spots of *Heracleum sosnowskyi*
- 2 drones (dji mavic pro and dji mavic 2 zoom)
- 280 km of total flight distance (150 km and 130 km)
- More than 8 hours of actual flight time to each pilot



The main problems

- Short period to easily recognise species
- Short flight time (less than 30 min)
- The best weather – sunny without any wind
- Restrictions (non flight zones, licenses, etc.)
- Unrecognized species (eg. *Impaties glandulifera*)
- Huge amount of graphical data (photos, videos)
- Expensive software (eg. pix4D) or higher class computers or servers needed
- Occurrences of drones flyaway or falling down from the sky



Flying zones with restrictions and non-flying zones in Lithuania (www.oran.lt)



Scientific tasks: The investigation of grassland vegetation in river valleys

- Relatively small areas (<20 ha)
- Possible to capture surface photos in one flight
- All the time drone constantly visible
- Can obtain precise morphological structure of site



3D area model (Šventoji river, near Mickūnai)



The investigation of grassland vegetation in river valleys

