



Small ponds: rainwater catchment and runoff

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Herdade das Cebolas, a mid-size farm located at Campinho (Alentejo, Portugal) is characterized by a grazed holm oak savannah growing in dry conditions (around 400 mm of rainfall a year). Farming with so little water requires a combination of strategies: (1) relying on trees with deep roots rather than on annuals, (2) making sure that the soil is always covered to keep it cooler and reduce evaporation, e.g. through preserving grass height or mulching, (3) increasing soil depth and organic content to improve its capacity to store rainwater, (4) working on landscape structure to catch, store and infiltrate water from the very top of the slopes and reduce run-off.

One measure of the fourth type that was implemented consists in digging 5 m wide ponds of 1 m depth. The system started with mapping contour lines every half a meter with a drone. We then located the ponds on water concentration spots, visible from the contours. This was the basis to dig ponds in the landscape, to contribute to the reduction of waterlogging in the lowest parts of the farm. It takes one hour with a backhoe to dig each pond.

The material removed serves to build a small dam. The larger stones are used to construct cairns that serve as shelters and habitat for little owls, snakes etc. Soils are especially shallow uphill, which means that part of the bottom of the pond is dug in stone. Hence, the vertical infiltration of water in the soil is very slow, which leaves enough time to some of our 10 species of amphibians to take advantage of autumn and spring rains to reproduce.

References and links:

<https://www.youtube.com/playlist?list=PL9WAF9lckk6YtI0kYWegWmX300MvezdDH>

<https://www.youtube.com/playlist?list=PL9WAF9lckk6agkPiukqBoW8PJ4CdXRSc>

<https://www.youtube.com/playlist?list=PL9WAF9lckk6a8blxkMMhwVKvqP1GKi3Mv>

<http://cebolasdocampinho.blogspot.com/2018/04/mas-res-2-avril-2018.html>



Figure 1. Small pond at Herdade das Cebolas (Credits: Axel Gosseries)

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Herdade das Cebolas