OC09 - Effect of the filling season on aquatic plants in Mediterranean temporary ponds

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Aquatic plant assemblages in Mediterranean temporary ponds start to re-establish themselves after the summer dry phase, usually from seed banks. We carried out an experiment to evaluate how plant assemblages could differ among years depending on the time in which the initial filling occurred. We collected sediments from a natural temporary pond and located them in aquariums that were assigned to one of the three treatments taken into account - autumn, spring or winter - which differ in the date on which they were filled. We counted the number of seedlings of different species emerged and recorded data about presence of flowers, seeds or spores, as well as biomass at the end of the experiment.

The results suggest a differentiate behavior of the seed bank. Time after filling is the main factor that triggered seedling emergence in our temporary ponds. Autumn filling resulted in the highest numbers of seeds/spores to be able to germinate. However, winter filling promoted plant growth the most. In the spring filling treatment, more terrestrial plant seedlings emerged and fewer total seeds/spores were produced. Pond filling season also influenced species phenology. When ponds are flooded earlier, plants may produce a higher number of propagules. However, in years when inundation is delayed to spring and hydroperiods are short, there is little or almost not seed production and the seedling emergence deplete the seed bank. In addition, during these short cycles, more terrestrial species emerge and survive, covering the pond basin if it dries out. An increase in the frequency of dry years, as well as of years in which ponds fill late and thus have shorter hydroperiods, may be detrimental for the conservation of pond vegetation, resulting in limited replenishment of the seed bank and favoring pond colonization by terrestrial species.