Seed regeneration of Phragmites australis and Typha latifolia

Börje Ekstam

Seedling recruitment is possible only if the seeds are available and possess the ability to germinate at the time when resources and conditions permit growth and survival of the juvenile stages. Seed dormancy and germination responses to environmental cues are therefore likely to function as site- and time-sensing mechanisms which control the seasonal and spatial emergence of seedlings. Studies of the thermal requirements for germination of *Phragmites australis* and *Typha latifolia* showed that both species have a capacity for immediate germination related to the characteristics of the diurnal changes of temperature. *P. australis* required large amplitudes for germination, whereas the amplitude requirement of *T. latifolia* largely was relieved at high temperature, suggesting a stronger avoidance mechanism by the former species against germination at sites characterised by small amplitudes, e.g. in water. Consequently, growth of *P. australis* seedlings was stunted in water, whereas *T. latifolia* exhibited developmental plasticity with thin elongated and ribbonlike leaves when submerged.

The variable response to a diurnal amplitude at different mean temperatures revealed by these two species suggests that experiments including just a few temperature regimes may bias tests of germinability and interpretations of the amplitude requirements in seed populations. Inadequate experimental temperatures may be one reason for poor germination often being reported for *P. australis* seeds.

The sensitivity to temperature fluctuations can also function in the timing of spring germination, since increasing irradiation in spring also leads to increased diurnal changes of temperature. Experimental sowing of *P.australis* in autumn, during the natural dispersal period in Sweden, showed that germination was postponed until spring. All seedlings emerged when diurnal mean temperatures and amplitudes were sufficiently large.

In contrast to what is reported for *T. latifolia*, the seeds of P. australis showed capacity for germination in darkness and exhibited high mortality during burial in wet soils. These two processes counteract the build-up of a soil seedbank and could explain why many *T. latifolia* and few *P. australis* seeds are found in surveys of seed banks in wetlands.

References

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Börje Ekstam, Limnology, Lund University-S-581 83 Lund, Sweden, Tel: +46 (0)46 108438 or (0)485 77424, Fax: +46 (0)485 77620, E-mail: bee@ifm.liu.se "or", Borje.Ekstam@limnol.lu.se