AQUATIC MACROPHYTE GROWTH SEASON IN CENTRAL AND NORTHERN EU AND THE IMPLICATIONS FOR AQUATIC MACROPHYTE RISK ASSESSMENTS FOR HERBICIDES

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Background

- Chemicals such as Plant Protection Products (PPPs) can enter surface waters through their use
- This can result in exposure of aquatic organisms such as macrophytes – therefore an assessment of the risk to this group may be required, particularly for PPPs with herbicidal Modes of Action (MOAs)
- However, some MOAs are only effective on plants which are actively growing (e.g. sulfonylureas)

Task

- A literature review was undertaken to identify the main active growing period for macrophytes in natural freshwater bodies
- Focus was on plant species present in climates relevant to Central and Northern EU Zones
- Relevance and reliability were manually screened
- For relevant/reliable references, growth periods were extracted, per species. These were considered together to determine an overall active growth period

Literature Search

- Wide-scope search query
- Citations sourced from peer-reviewed journals
- 'Grey literature' sourced from google scholar

122,553 References

Text Mining

- Gazetteer (look-up) lists created to search citations for terms of particular interest

210 References

Manual Search

- Manual search in Google scholar for terms of interest
- References found within other texts

6 References

Screening

- Starting with abstract, then full text if required
- Species relevance? Data over full year? Climate classification? In English?

25 References

Full Evaluation

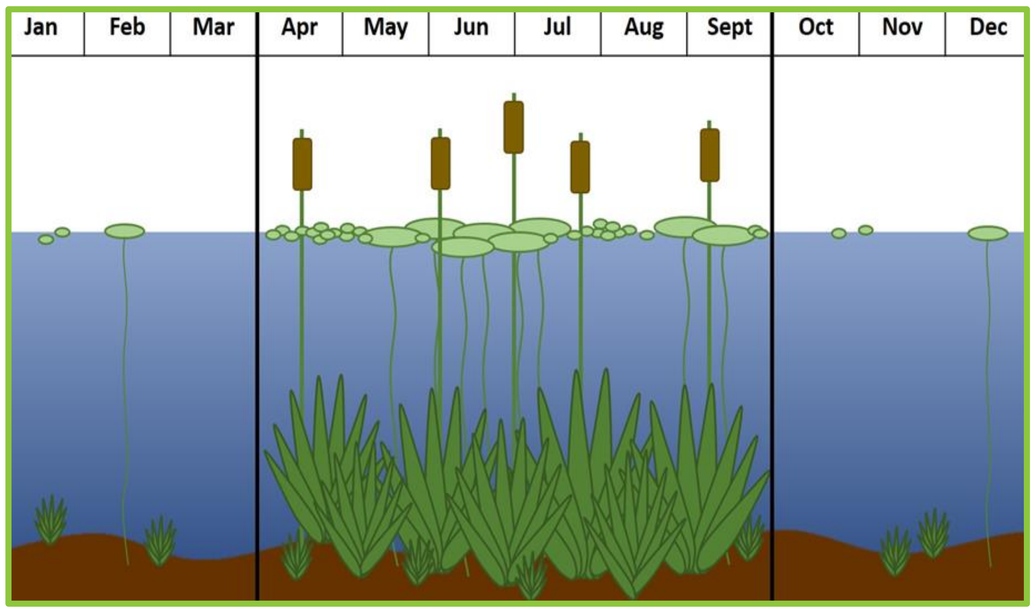
- Summaries were produced for all texts that were fully evaluated
- Extracted growth periods for each species

Reliability Assessment

- Klimisch scoring system applied to each fully evaluated citation

Discussion

- From the fully evaluated reports, **43 growth periods** were extracted. These were associated with at least 31 aquatic macrophyte species (some not identified to species level)
- 15 dicots and 22 monocots were represented. Classification by life-form were emergent, rooted (n = 11); floating leaved, rooted (n = 7); submerged, rooted (n = 18); and free-floating, unrooted (n = 2)
- There was no clear effect of **climate classification** on growth period. However, some climates were underrepresented. Further investigation would be required of local temperature, light levels, etc. to investigate impact of climate on growth period
- Also no clear effect on growth period of: **waterbody type** (pond, stream, ditch, etc.); **macrophyte category** (monocot or dicot, floating or rooted, submerged or emergent); and of **sampling method** or **growth metric used**



Conclusion

The main growth period for most aquatic macrophytes in the NZ and CZ:

- **Begins in April**
- **Ends in September**

Regulatory Implications

- For risk assessment/authorisation of PPPs whose MOA only acts on plants when actively growing
- If application timing and modelled aquatic exposure period is outside of active growth periods, may be possible to conclude a low risk for aquatic macrophytes
- The conclusions on growth period here apply to the majority of species reviewed, and the majority of growth which occurred for each species. The growth period is relevant to evaluations in the NZ and CZ EU

ACKNOWLEDGMENTS

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