

# Alien aquatic macrophytes in lower Belgium (Flanders): WFD and Natura 2000 assessment

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# WFD - Ecological quality...

- **high status:** *no or very minor man-induced alteration from **pristine condition***
  - even limited occurrence of ‘aliens’ implies (at least) some resource competition with native taxa
  - any aliens should be almost absent
- **good status:** *some alteration noticeable, but no significant risk of undesirable effects*
  - aliens with ‘transformer’ capacities, incl. those outcompeting native taxa, should be almost absent

Simple assessment solution:  
rank aliens by **invasiveness** (dispersal)  
and **effects on ecosystem**

# However,

- invasiveness and risk assessment will change in time
  - latency
  - decrease of impact (e.g., *Elodea canadensis*; 'integration into natural vegetation')
  - increase of impact (e.g., with changing environmental conditions)
  - ecology is full of surprises
- ranking depends on scale (site/region)
- ranking depends on societal values
- freshly introduced species difficult to judge
- difficult to avoid a sliding base line

## Moreover...

- some effects of aliens may be positive:  
'it may be better to have an alien, than to have no vegetation at all'
- particularly a problem at low quality, but EQR scale is continuous
- some aliens indicate relatively good environmental conditions
- many are here to stay...
- costs!

## Native plants can be 'aliens', also...

- introduced into regions and sites where they were previously absent
- unexpected combinations (water type, natural vegetation); often simultaneous introduction of aliens
- often difficult/impossible to spot
- popular garden plants valued by conservationists:  
*Hydrocharis morsus-ranae*, *Menyanthes trifoliata*, *Nymphoides peltata*, *Ranunculus lingua*, *Stratiotes aloides*
- increasing phenomenon

# Macrophyte assessment in Flanders

- **Macrophyte:** aquatics, phreatophytes and selected aphreatophytes
  - **EQRs:** 4 metrics, 'one out all out'
    - abundance-weighted ratio of **type-specific taxa** / observed taxa\*
    - 1-(abundance-weighted ratio of **disturbance indicators** / observed taxa)\*
    - number of observed **growth forms** / number of expected growth forms\*\*
    - **abundance aquatic vegetation** ( $\pm$  ECOFRAME; not for all water types)
- \* for *aquatic and shore vegetation, separately*
- \*\* for *aquatic vegetation, only*

# Possible effect of aliens on metrics

- type specificity: negative (if selected)
  - M or lower if on average 'abundant'
- disturbance: negative (if selected; the lowest metric for ca. 35 % of surveyed river sites)
  - M or lower if on average 'abundant'
- growth form: positive (the metric scoring the lowest of all in 40-45 % of surveyed sites)
- vegetation abundance: positive or negative (deviation from optimum; the lowest metric for ca. 30 % of surveyed standing waters)
- aliens as such are not treated differently from native species, but judged according to 'water type specific' character and relation to disturbance

# Aliens in Natura 2000

- Art. 22 § b. deliberate introduction of non-native species should be restricted if required to avoid damage to habitats or native species requiring protection
- Art. 1 § e. consequences for conservation status of habitats:  
*if specific structure and functions necessary for long-term maintenance are at risk*
- occasionally, alien plants or their associations are listed as typical for habitats (3150 *Azolla*; 2190 *Elodeetum canadense*)



# Conservation status of habitats in Flanders; assessment proposal (Heutz & Paelinckx, ed., 2005)

‘invasive’ aliens\* (more in the sense of transformers) are included as one of several disturbance criteria for:

- habitats 3140 (*Chara*) and 3150 (Magnopotamion-Hydrocharition):

favourable A	favourable B	unfavourable C
< 10 % cover	10-50 % cover	> 50 % cover

- habitat 3260 (lowland rivers with *Ranunculon fluitantis* and *Callitricho-Batrachion*):

favourable A	favourable B	unfavourable C
absent	< 10 % cover, no strong increase	> 10 % cover, or strong increase

\* listed are: *Hydrocotyle ranunculoides*, *Myriophyllum aquaticum*, *Crassula helmsii*, *Ludwigia grandiflora*, *Lemna minuta*, *Elodea nuttallii*,...

# Conservation status of habitats in Flanders; further development

- extension ‘aliens’ to other aquatic habitats
- matching lists of type-specific species for WFD and HD
- matching lists of disturbance species for WFD and “agressive aliens” for HD
- matching EQR-scores versus favourable status HD

## Recommendation:

- improve consensus between member states on how to define habitat types (e.g., can *Elodea canadensis* be typical for any habitat?)
  - different vegetation types correspond to different WFD-types, e.g., lowland rivers habitat 3260 (*Ranunculion fluitantis* and *Callitricho-Batrachion*) can occur in 6+ Flemish WFD types

# Conclusions

## For the WFD

- classification and impact important
- all neophytes could be considered unwanted, but the clock cannot be turned back
- if only 'agressive' neophytes are considered, the base line will change
- need for international consensus, at least for river basins crossing member-state boundaries
- preferably, similar approach for all quality elements

## For the Habitats Directive

- requirements less fixed (no normative definitions)
- impact most important

Catch me if you can...  
(large *Lemna minuta*)

Leave me alone, someone listed  
me as typical of N-3150 habitat!  
(*Wolffia arrhiza*)

Am I doing  
anything  
wrong?  
(*Azolla  
filiculoides*)



I'm fine!  
(*Lemna gibba*)

Who knows  
where I'm  
going to?  
(*Lemna  
turionifera*)

Help, I'm  
not feeling  
well!  
(*Lemna  
trisulca*)

No one ever notices me...  
(small *Lemna minuta*)

I'm supposed to be  
N-3150, also...  
(*Spirodela polyrhiza*)

There aren't too  
many of me, so...  
(*Lemna minor*)

**If only plants could talk ... !**