



Assess ecological risks of toxicants

UP-DOWN

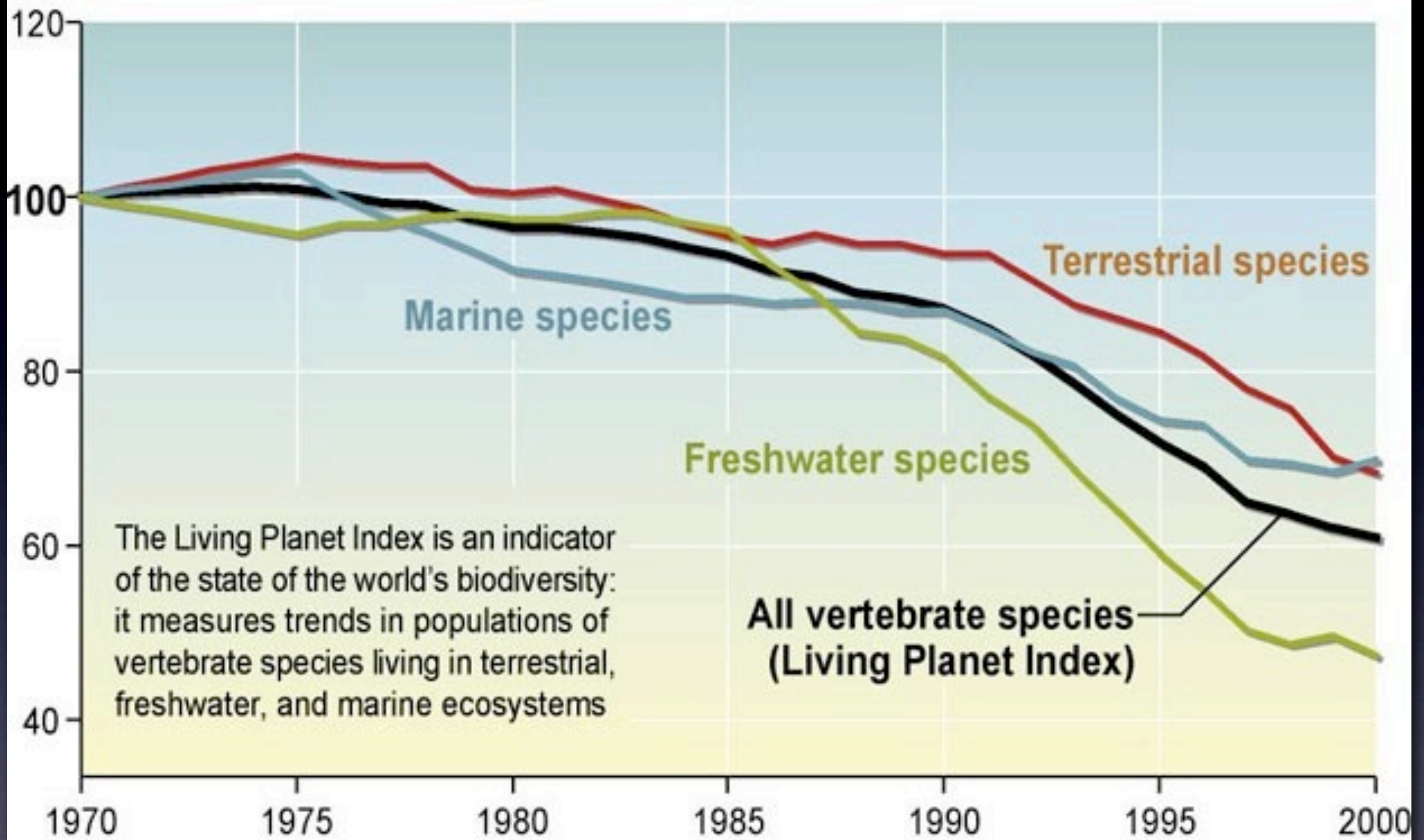
risk assessment approach

Matthias Liess



HELMHOLTZ
ZENTRUM FÜR
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Population Index = 100 in 1970



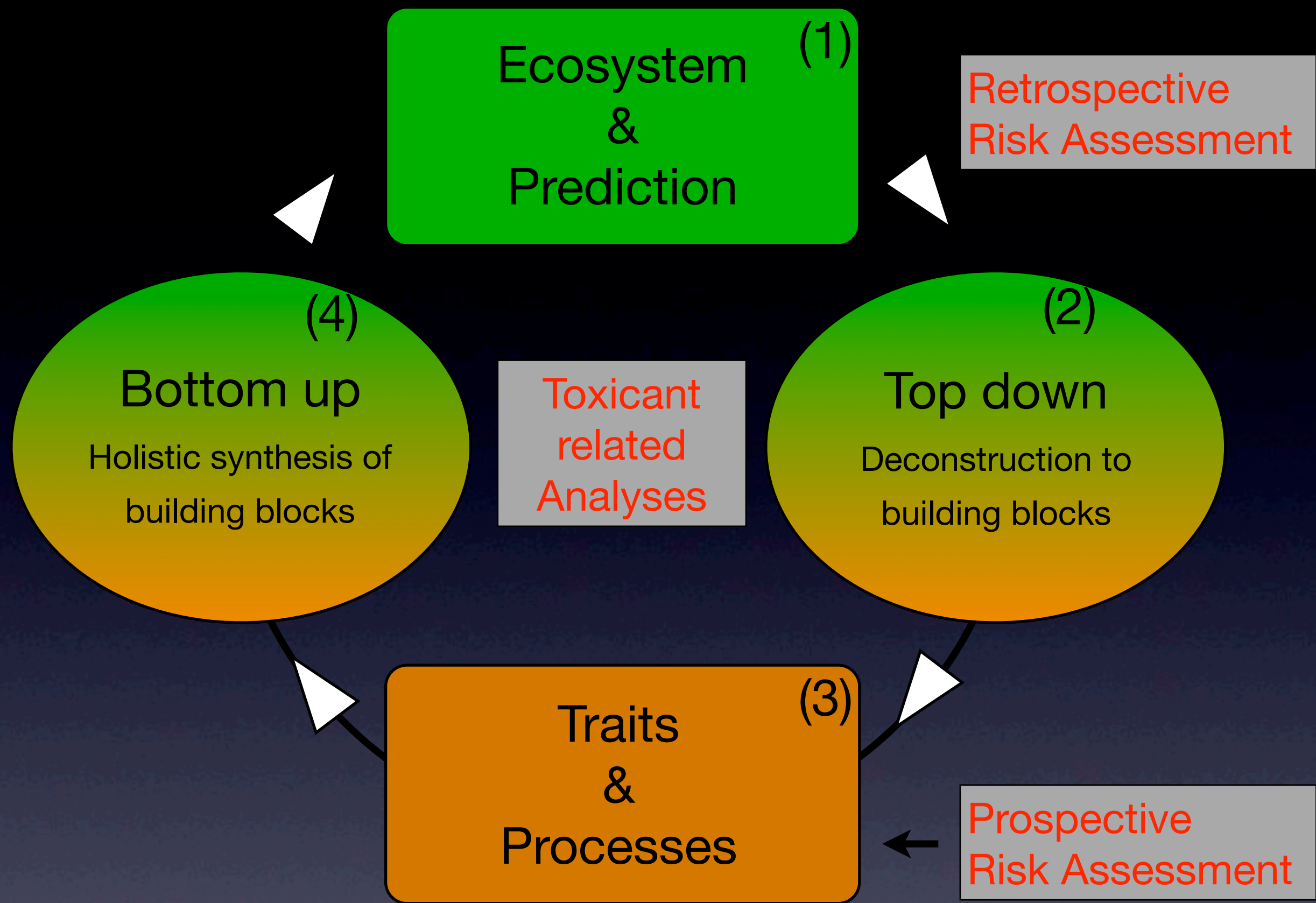
The Living Planet Index is an indicator of the state of the world's biodiversity: it measures trends in populations of vertebrate species living in terrestrial, freshwater, and marine ecosystems

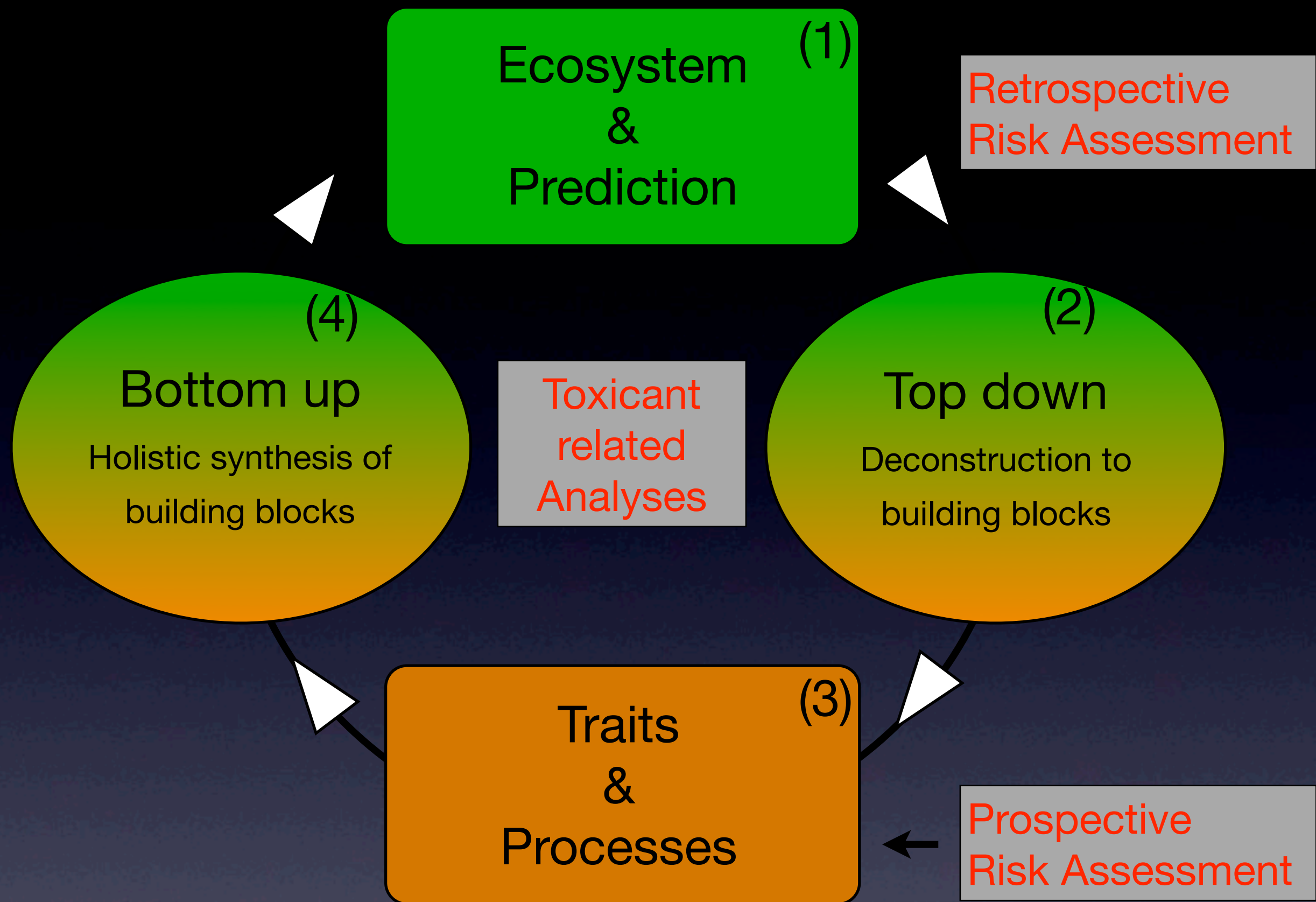
**All vertebrate species
(Living Planet Index)**

Source: WWF, UNEP-WCMC

Millennium Ecosystem Assessment: Biodiversity synthesis

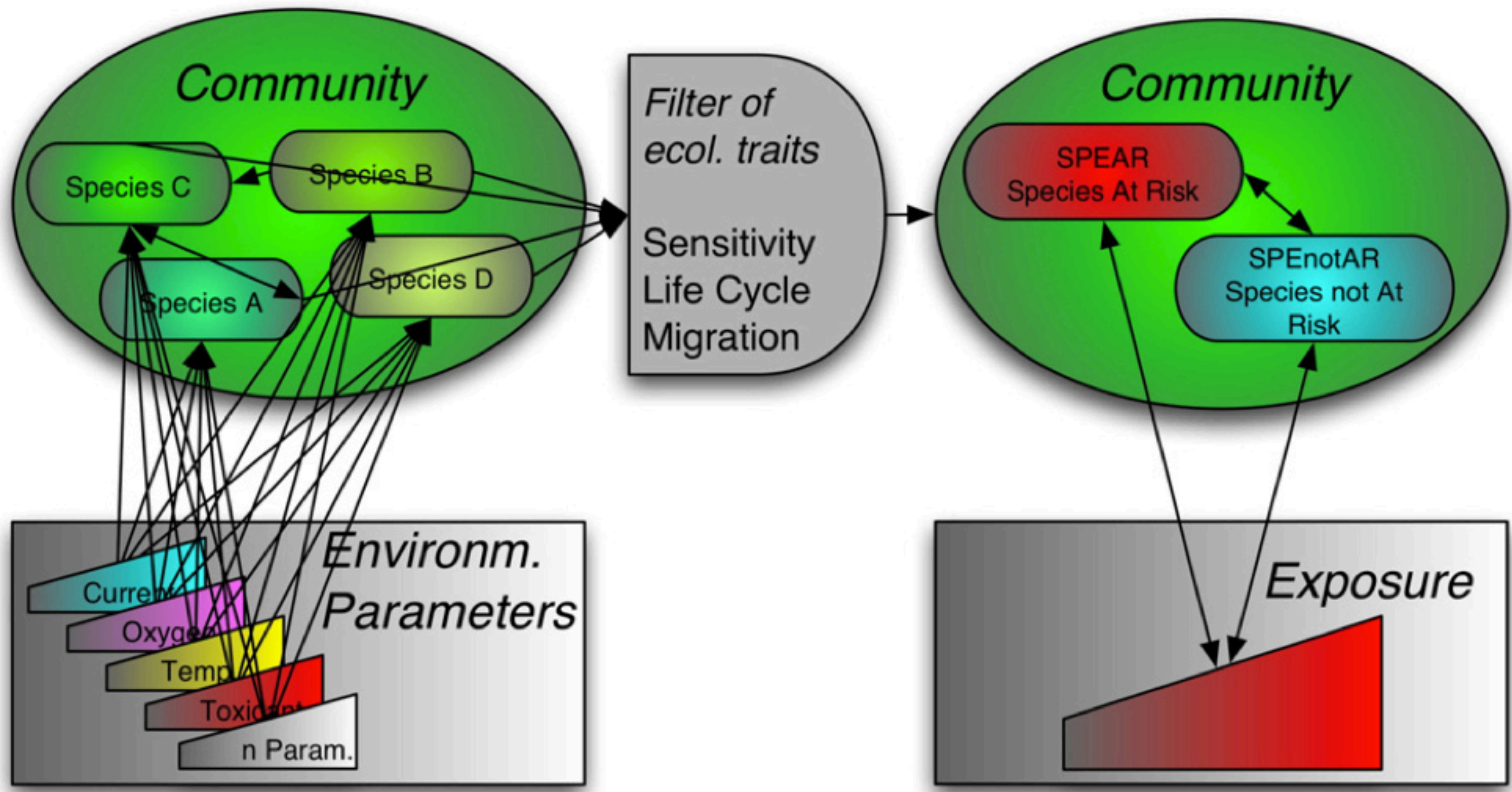
- Identifying vulnerable species / traits
- Consider in prospective risk assessment
- Validate protection level (under- overprotective)





Liess M et al. 2005.
 Analyzing effects of pesticides on
 invertebrate communities in
 streams.
 ET&C

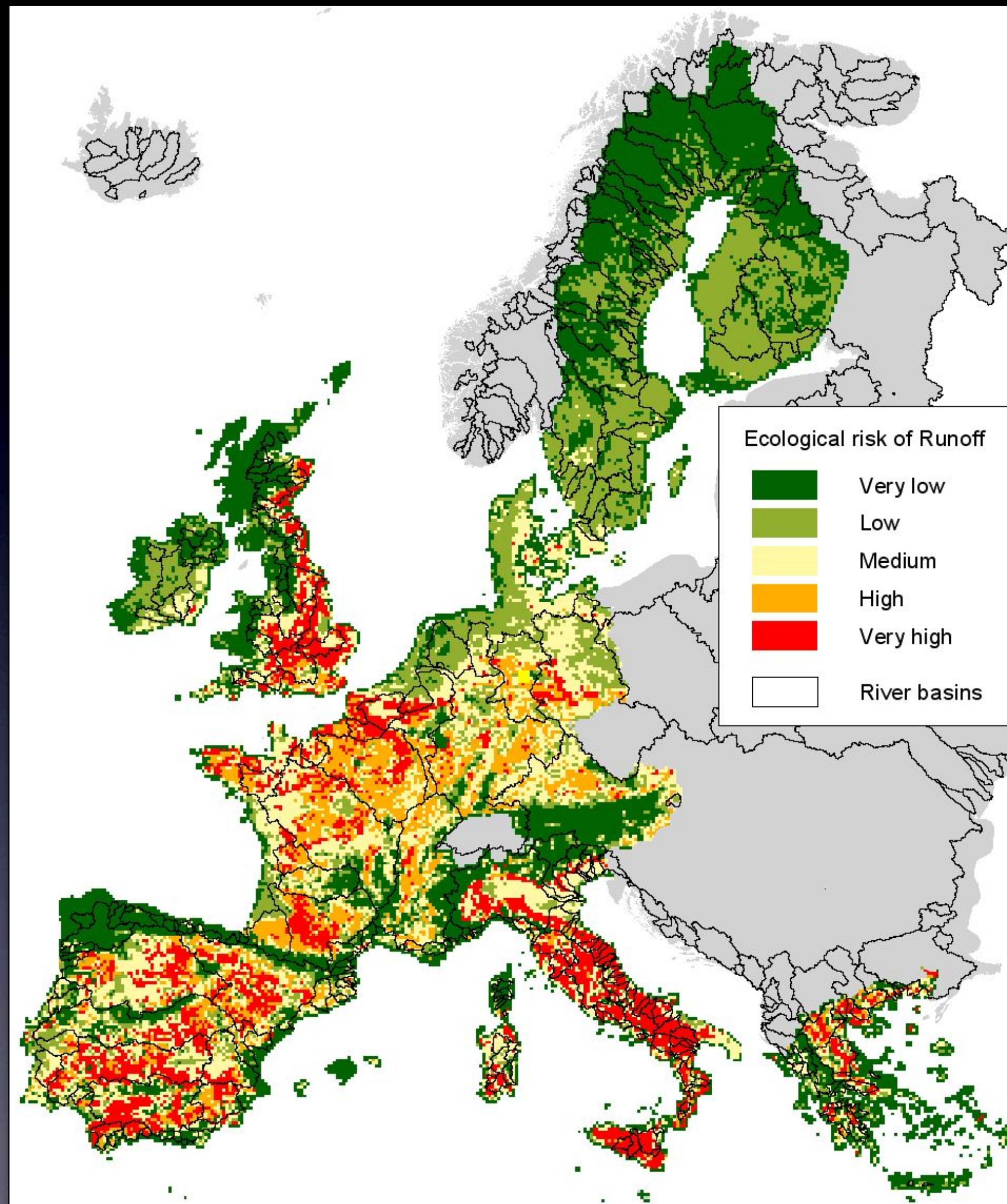




Retrospective

Risk Assessment

non-point pesticide Risk



Schriever C, Liess M. 2007.
Mapping ecological risk of
agricultural pesticide runoff.
Science of the Total Environment.
384, 264-279.

&
Kattwinkel et al. 2011
Climate change, agricultural
insecticide exposure, and risk for
freshwater communities.
Ecological applications.

Prospective

Risk Assessment

Random selection



Trait related selection

Insensitive



Pisidium sp.

Plurivoltine



Chironomus sp.

Sensitive, univoltine



Caloperyx sp.

Migration

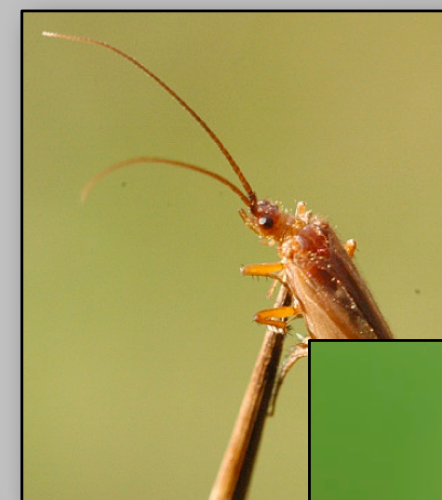


Gammarus sp.

Early emergence



Baetis sp.



Anabolia



Ephemera sp.