



Libellen en hun habitat

Wilco Verberk



Stichting **Bargerveen**



Radboud University Nijmegen





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Inzicht in koppeling tussen soort en habitat

Voorkeur voor habitat

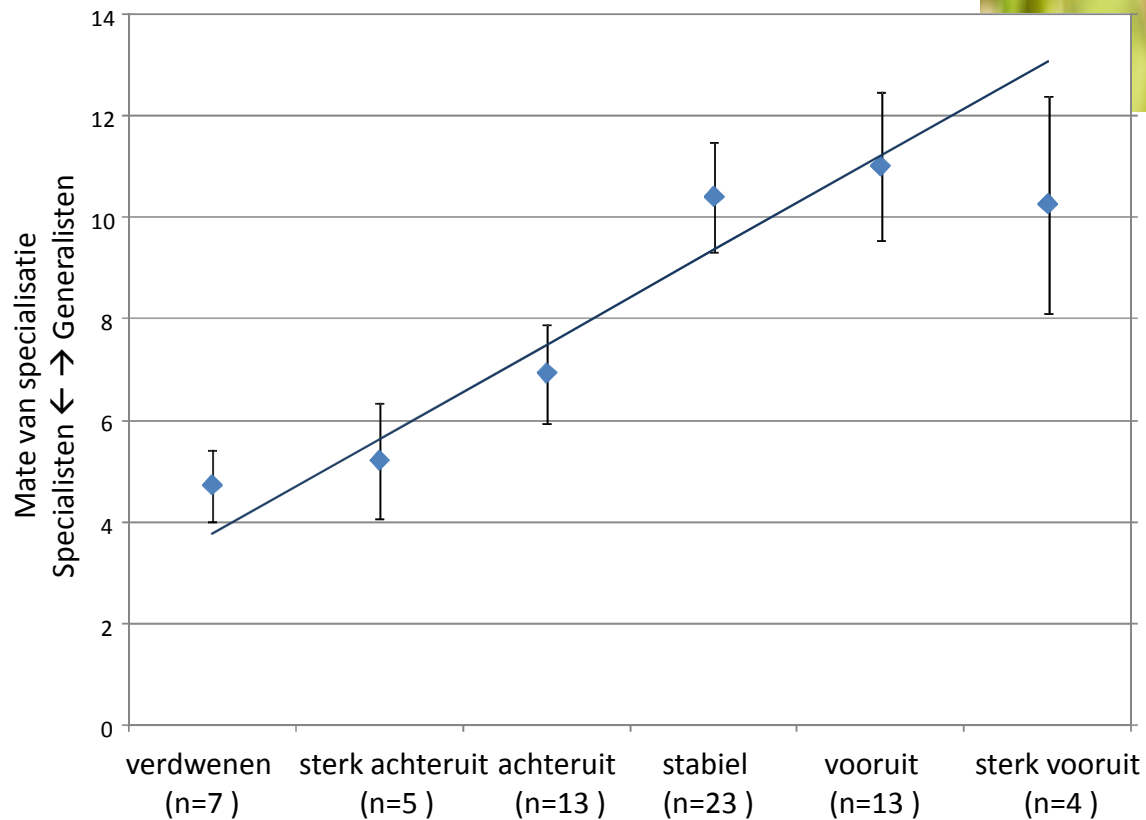
breed en variabel



Inzicht in koppeling tussen soort en habitat

Voorkeur voor habitat

breed en variabel



Specialisten verliezen terrein, generalisten boeken winst

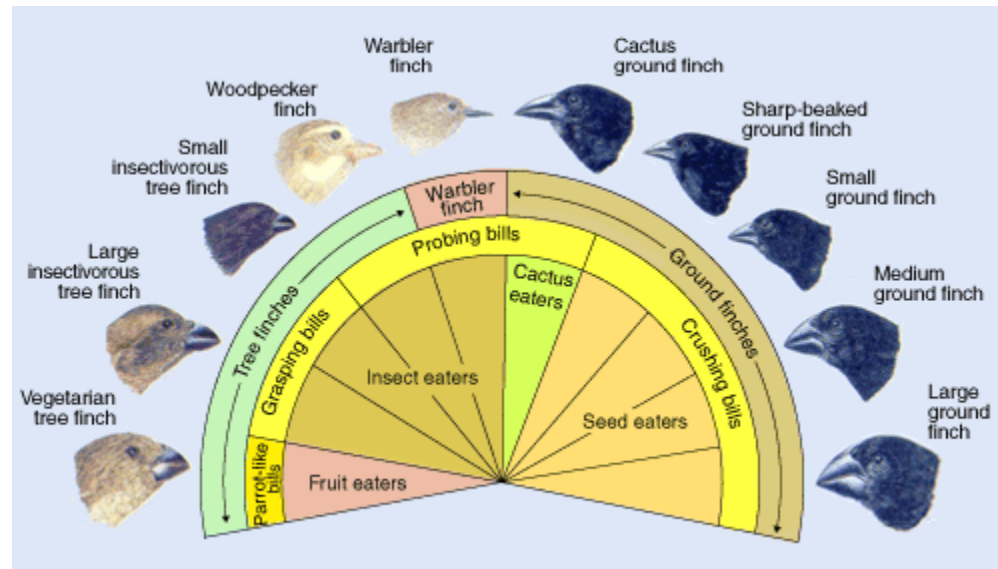
NVL (2002) *De Nederlandse Libellen* (Odonata). *Nederlandse Fauna* 4.

Inzicht in koppeling tussen soort en habitat

Niche van soorten zal nooit geheel overlappen

-ruimte

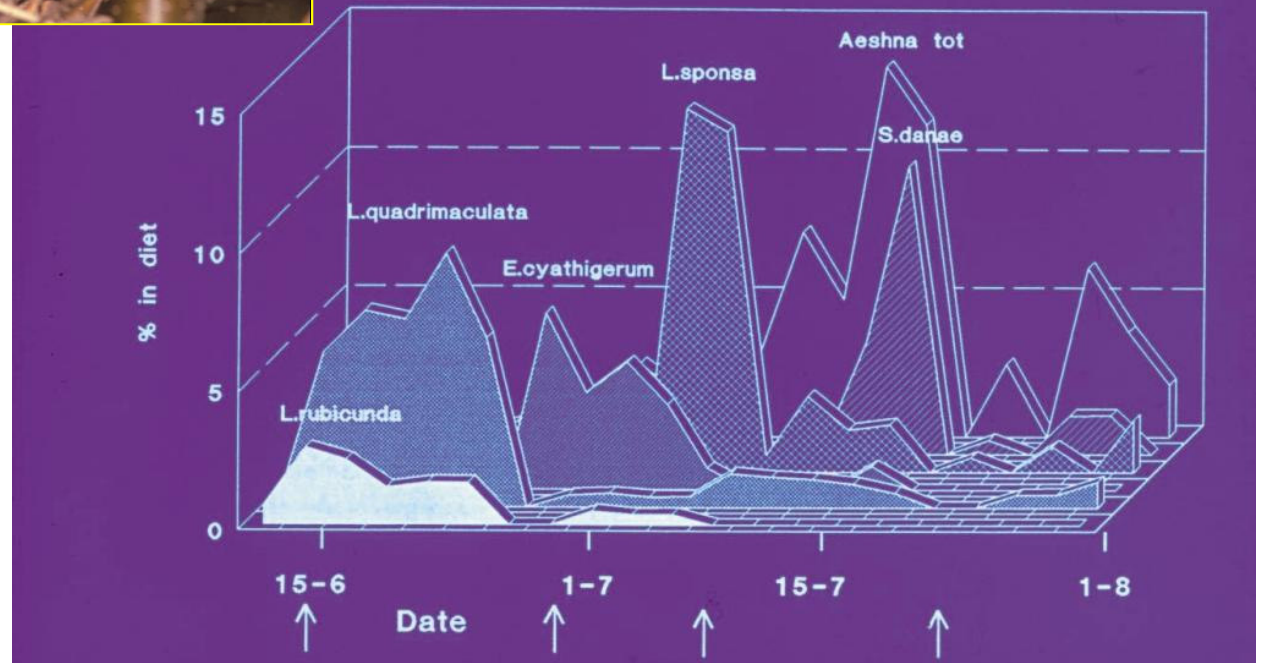
-tijd



Temporele scheiding op verschillende schaalniveaus



Diet contribution of dragonfly species
breeding season 1994



Inzicht in koppeling tussen soort en habitat

- Kenmerken soorten (larven & adulten)

Table 2. Odonate species recorded as adults or exuviae at restored lakes and reference lakes at Arjuzanx during May–August 1998.

	<i>Adults</i>		<i>Exuviae</i>	
	<i>Reference</i>	<i>Restored</i>	<i>Reference</i>	<i>Restored</i>
<i>Zygoptera</i>				
<i>Ceriagrion tenellum</i>	+	+	+	+
<i>Chalcolestes viridis</i>	+	–	+	+
<i>Coenagrion lindenii</i>	–	+	–	–
<i>Coenagrion puella</i>	+	+	+	+
<i>Coenagrion scitulum</i>	+	+	+	+
<i>Enallagma cyathigerum</i>	+	+	+	+
<i>Erythromma viridulum</i>	+	+	–	–
<i>Ischnura elegans</i>	+	+	+	+
<i>Lestes dryas</i>	+	+	+	–
<i>Lestes sponsa</i>	–	+	+	–
<i>Lestes virens</i>	+	+	+	–
<i>Pyrhosoma nymphula</i>	+	+	–	–
<i>Sympecma fusca</i>	+	+	–	–
<i>Anisoptera</i>				
<i>Anax imperator</i>	+	+	+	+
<i>Cordulia aenea</i>	+	–	+	+
<i>Crocothemis erythraea</i>	+	+	+	+
<i>Gomphus pulchellus</i>	+	–	–	+
<i>Leucorrhinia albifrons</i>	+	–	–	–
<i>Libellula quadrimaculata</i>	+	+	+	+
<i>Orthetrum albistylum</i>	+	+	+	+
<i>Orthetrum cancellatum</i>	+	+	+	+
<i>Orthetrum coerulescens</i>	+	+	+	+
<i>Sympetrum sanguineum</i>	+	+	+	+
<i>Sympetrum vulgatum</i>	+	–	+	+
Total	22	19	18	16

Amico; Darblade; Avignon; Blanc-Manel & Ormerod (2004) Odonates as Indicators of Shallow Lake Restoration by Liming: Comparing Adult and Larval Responses. *Restoration Ecology* 12: 439.

Inzicht in koppeling tussen soort en habitat

- Kenmerken soorten (larven & adulten)
- Mogelijkheden en beperkingen vanuit habitat

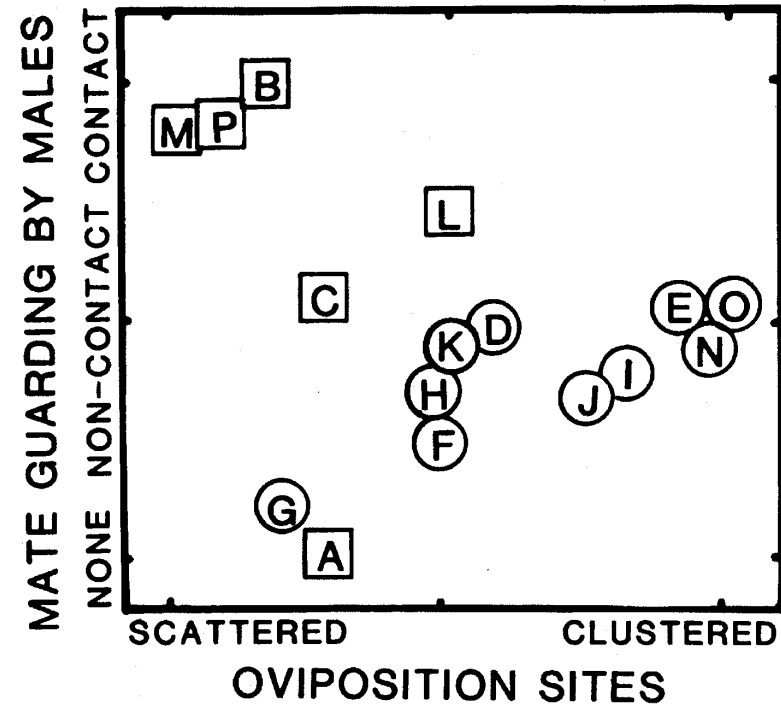
Habitatselectie

- verdeling habitat
- eiazetgedrag
- territorium gedrag

46

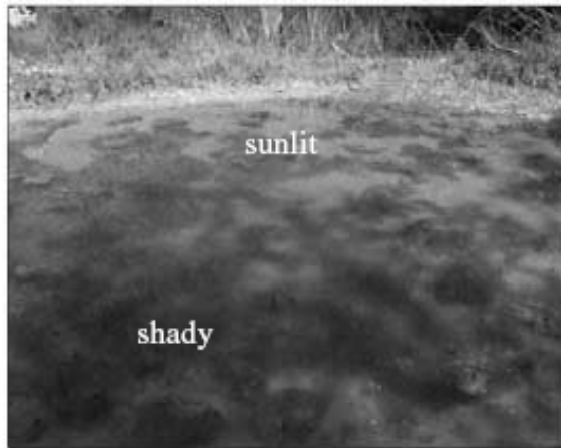
Florida Entomologist 68 (1)

March, 1985

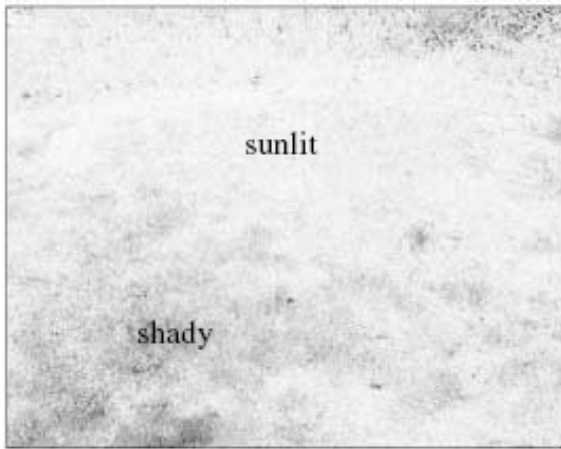


Buskirk & Sherman (1985) The influence of larval ecology on oviposition and mating strategies in odonata. *Florida Entomologist* 68: 39.

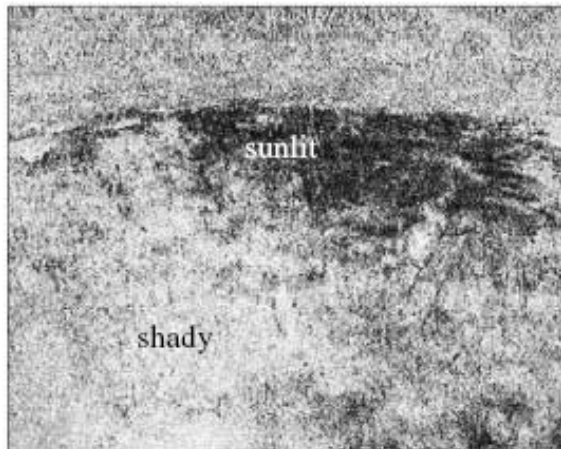
Brightness



Degree of polarisation



Angle of polarisation
measured from the vertical



Wildermuth (1998) Dragonflies Recognize the Water of Rendezvous and Oviposition Sites by Horizontally Polarized Light: A Behavioural Field Test. *Naturwissenschaften* 85: 297.

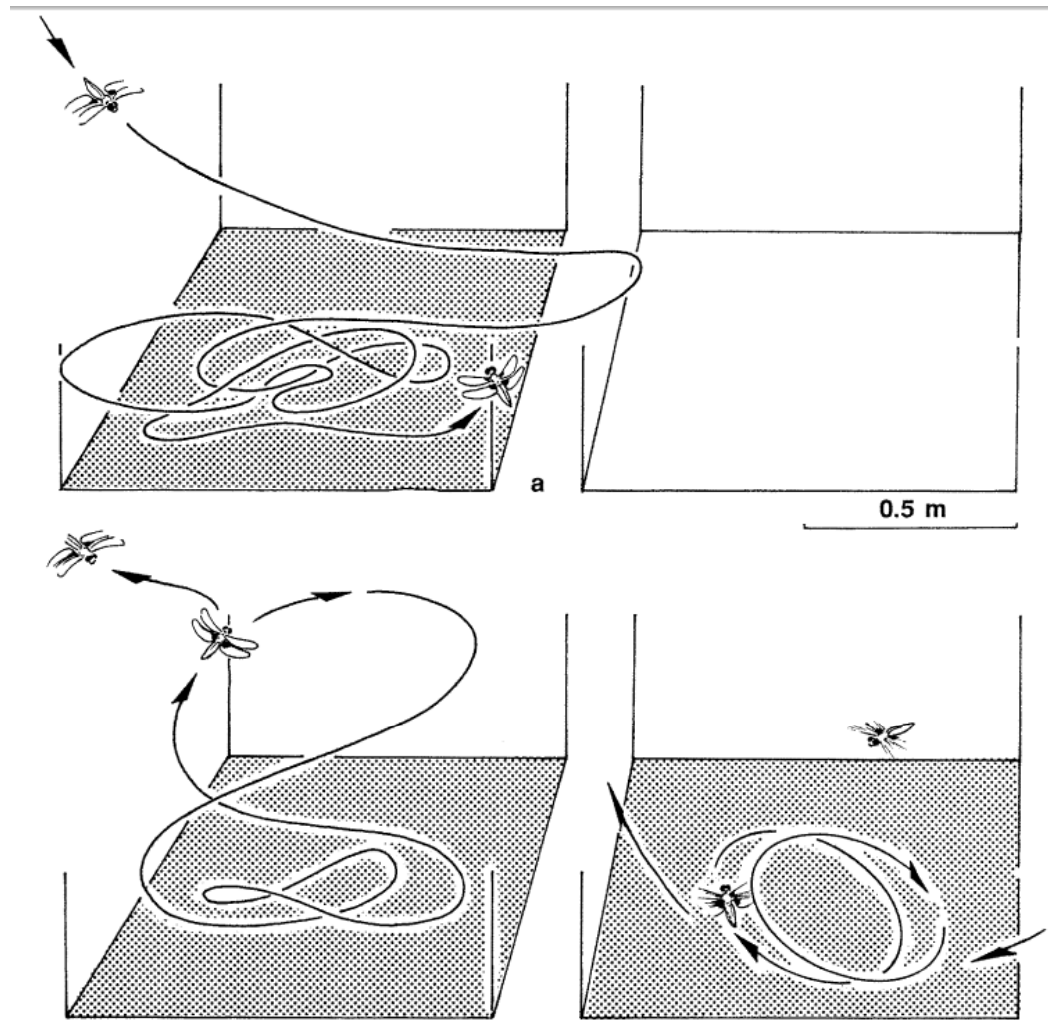


Table 5. Number of arrivals, fights, copulations and oviposition attempts at brown perspex (Pe) and aluminium foil (Al) in two “percher” species of dragonfly. T, Total duration of observations

Anisoptera – “perchers”	arrivals (males)		fights (males)		copulations		oviposition attempts	
	Pe	Al	Pe	Al	Pe	Al	Pe	Al
<i>Libellula depressa</i> (T=22 h)	39	0	7	0	1	0	10	0

Kuwait oil lakes as insect traps

SIR — During the Gulf War in early 1991, Iraqi occupation forces blasted oil wells and pipelines in the desert of Kuwait, forming hundreds of oil ponds. These still exist¹, and continue to trap a variety of

characteristics of water, differences in transparency being restricted to the visible spectrum. Even for animals sensitive to polarized light at visible wavelengths, oil lakes could appear as exaggerated water

ure, lower left), because the polarization of surface-reflected light is degraded by the refracted, vertically polarized light returning from the sandy bottom.

The Kuwait oil lakes can be considered as an upscaled version of Schwind's experiments^{3,4}. As disastrous as they are, they offer unique research opportunities. They

iments^{3,4}. As disastrous as they are, they offer unique research opportunities. They are massive animal traps that could be used to monitor the distribution, seasonal occurrence and movements of desert animals. Because they also mimic water surfaces, they attract water insects and birds on migration that are otherwise difficult to record, and could help to monitor changing migration patterns caused by the draining of marshlands in southern Iraq.

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Freshwater Biology (2007) 52, 1700–1709

doi:10.1111/j.1365-2427.2007.01798.x

Ecological traps for dragonflies in a cemetery: the attraction of *Sympetrum* species (Odonata: Libellulidae) by horizontally polarizing black gravestones

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**Biooptics Laboratory, Department of Biological Physics, Physical Institute, Eötvös University, Budapest, Hungary*

[†]*Group for Methodology in Biology Teaching, Biological Institute, Eötvös University, Hungary*

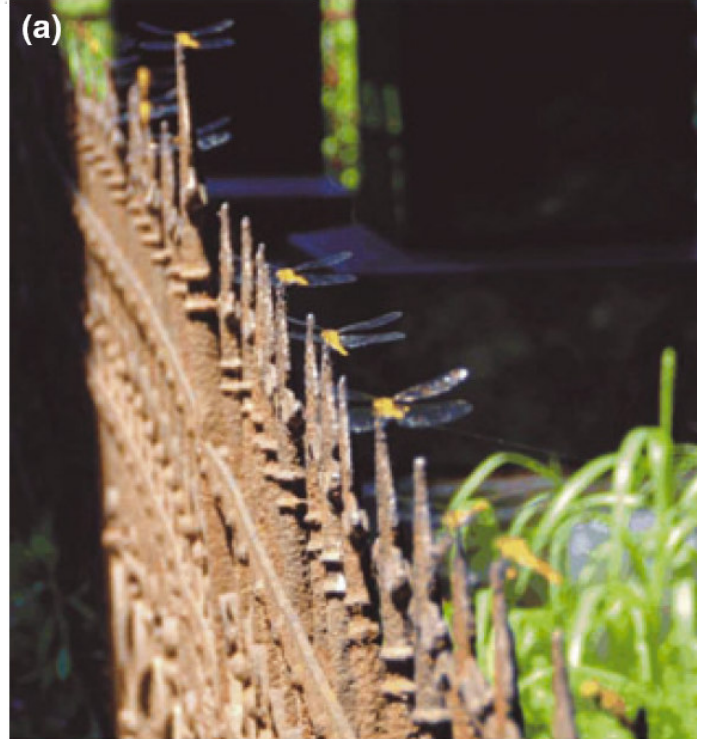
[‡]*Institute of Zoology, University of Zürich, Zürich, Switzerland*

G. Horváth et al.

Colour picture
(a)



(b)
Degree of linear
polarization p

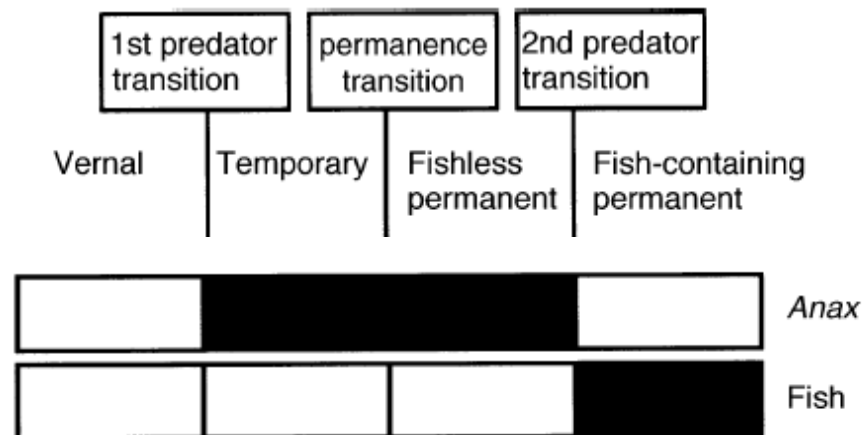


(a)

Predatie en droogval

-vissen, grote anisoptera (Anax)

-duur van periode met water

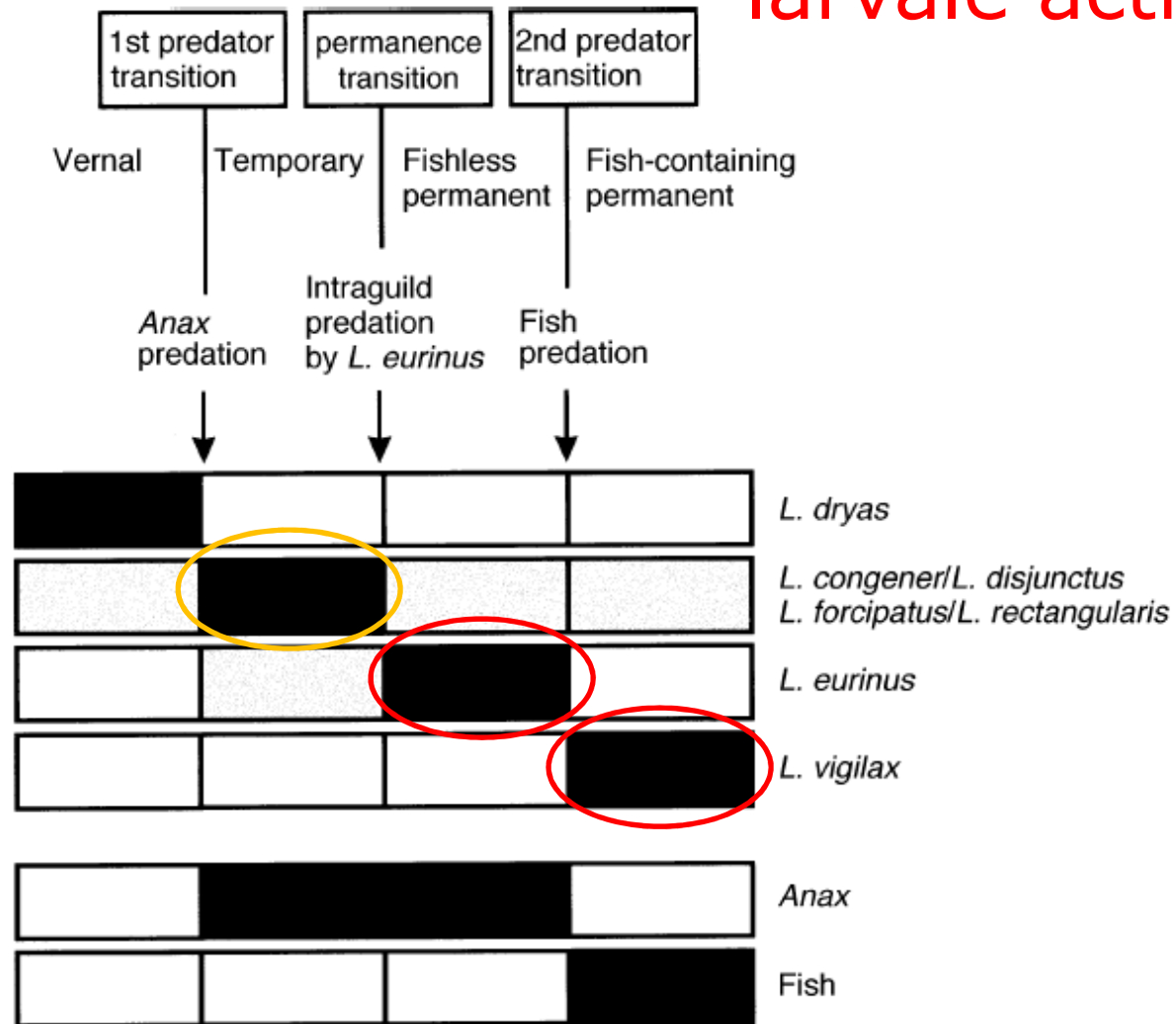


Stoks & McPeck (2003) Ecology 84:1576 & Ecology 84:3327

Predatie en droogval

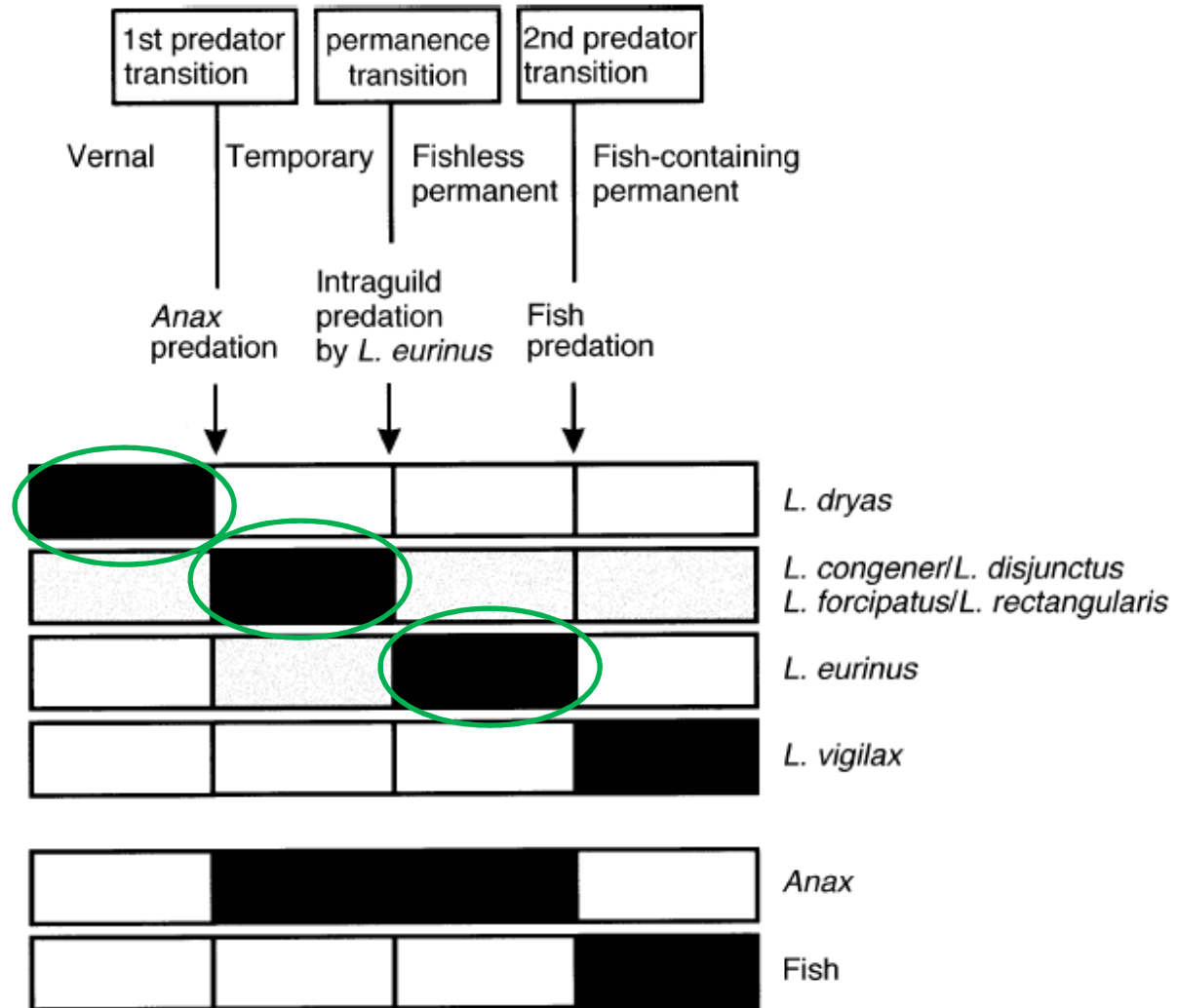
eidiapause

larvale activiteit



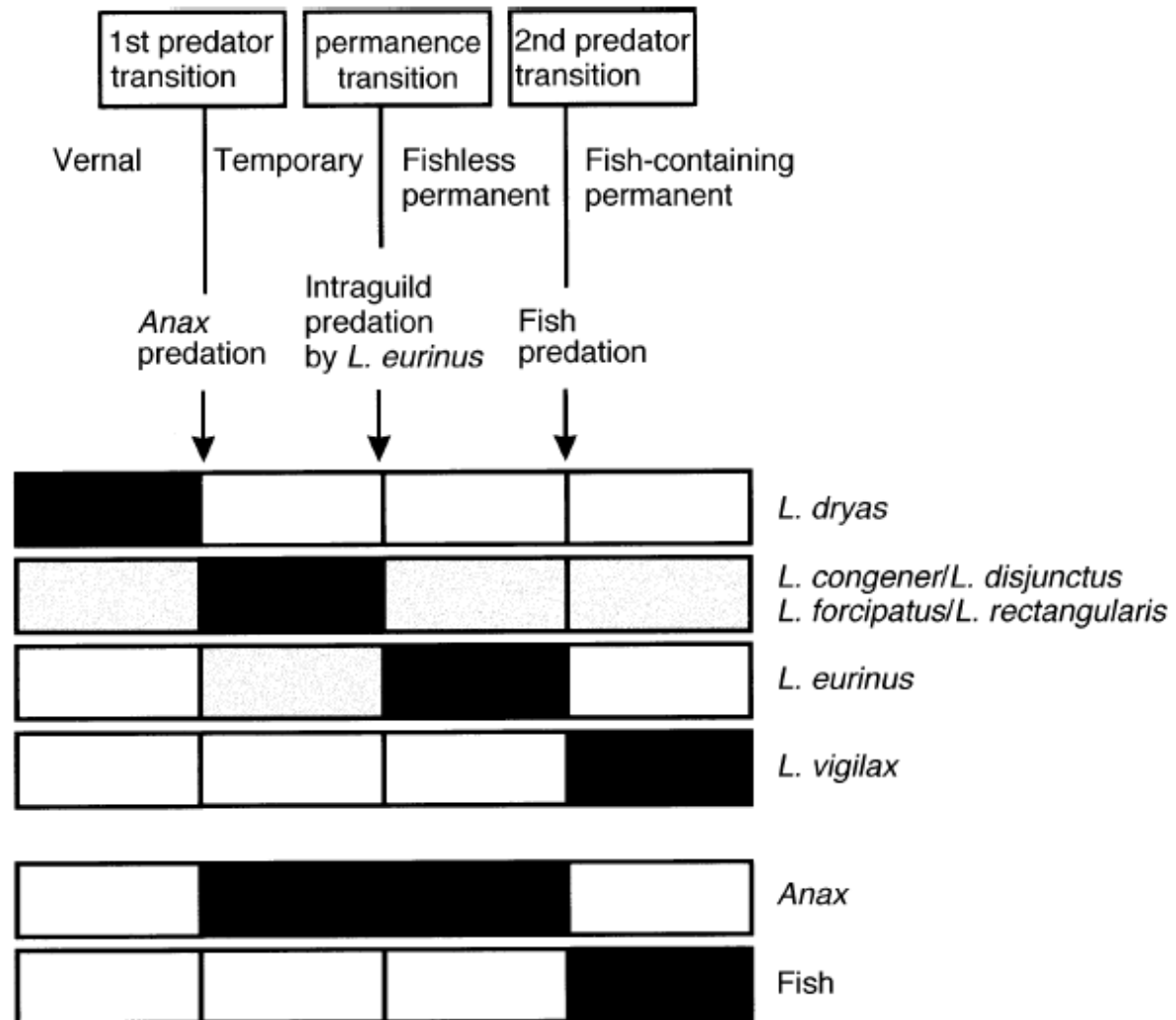
Predatie en droogval

Vis



Predatie en droogval

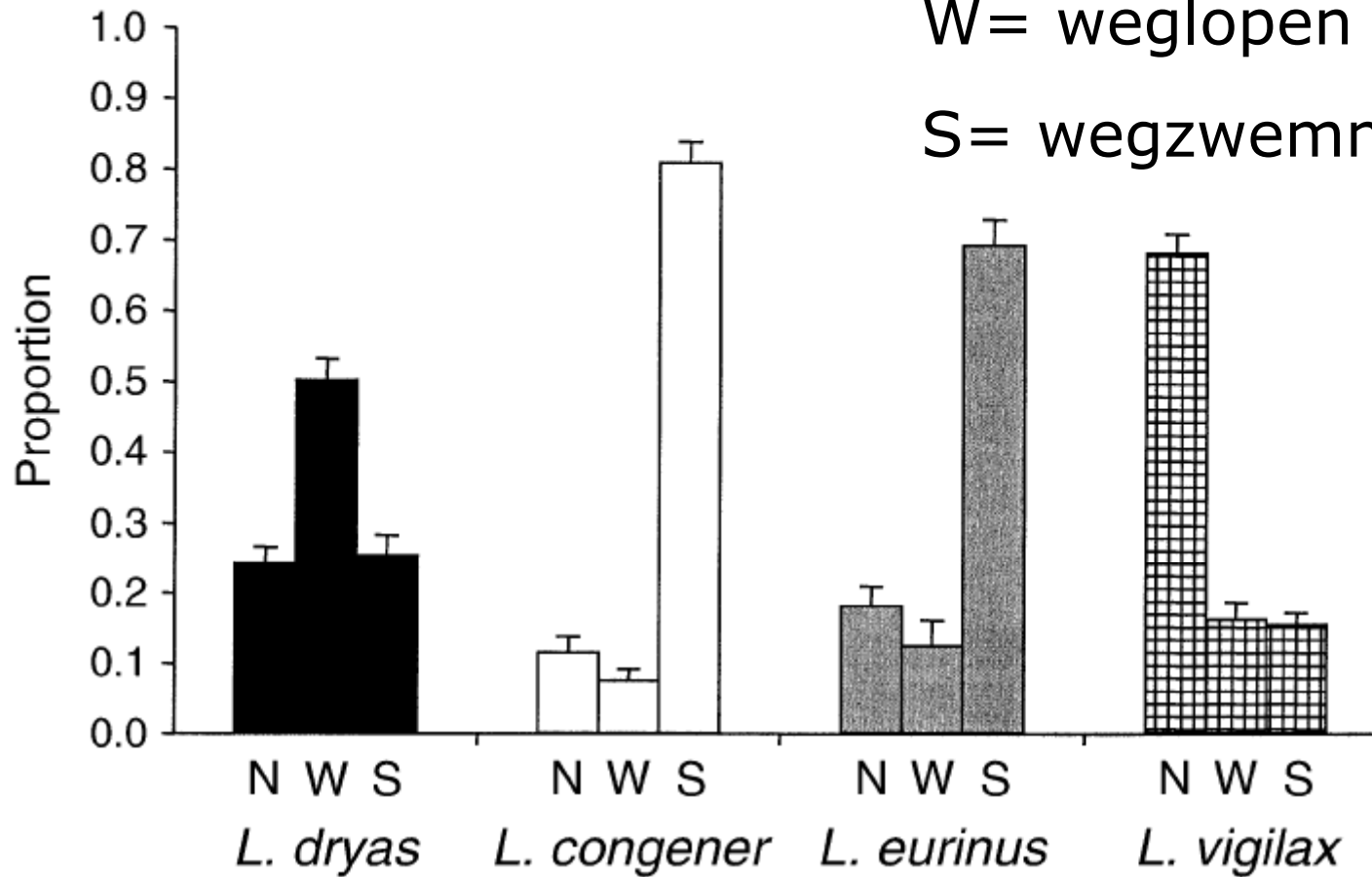
Anax



N= bewegingsloos (no move)

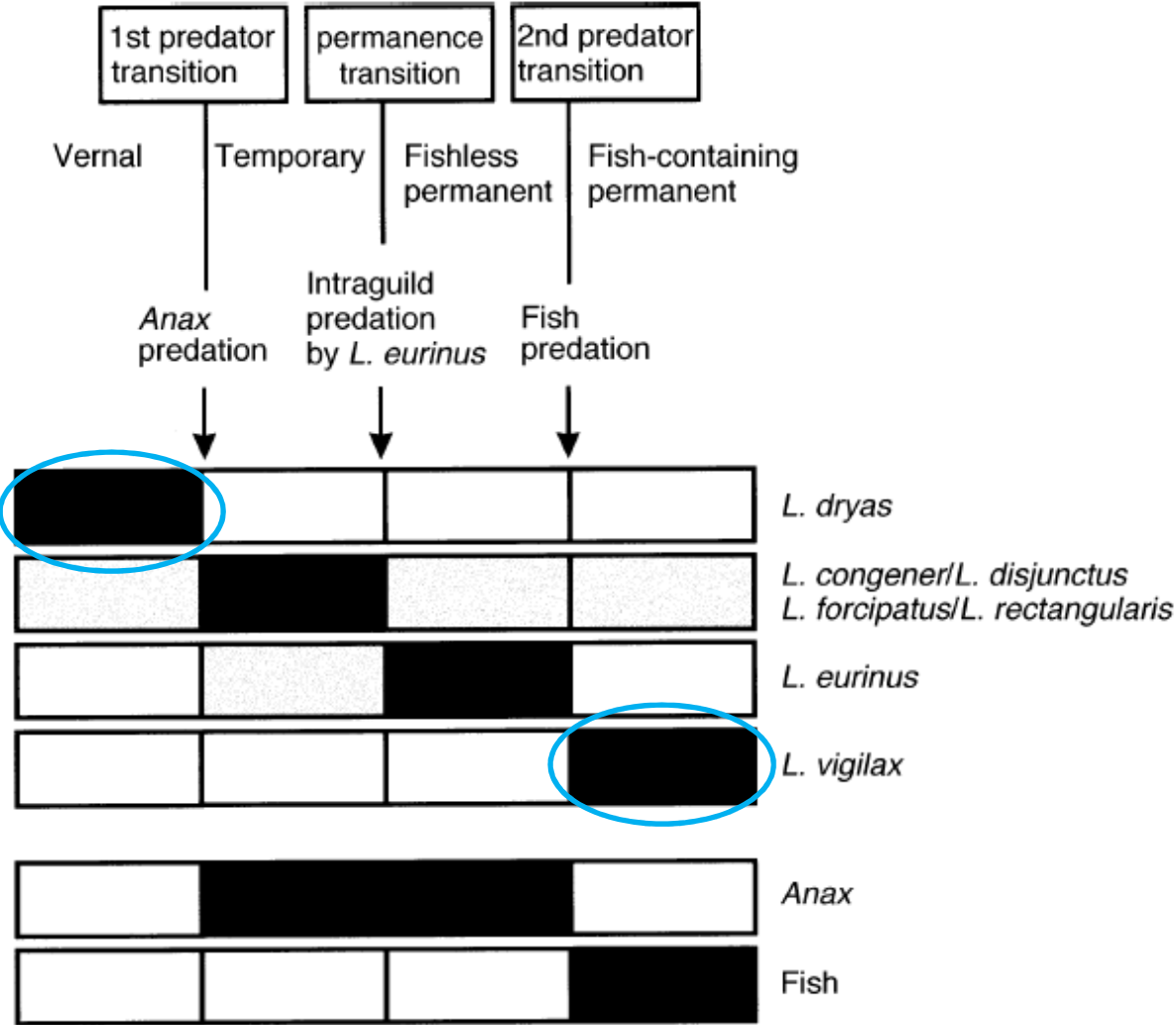
W= weglopen (walk)

S= wegzwemmen (swim)



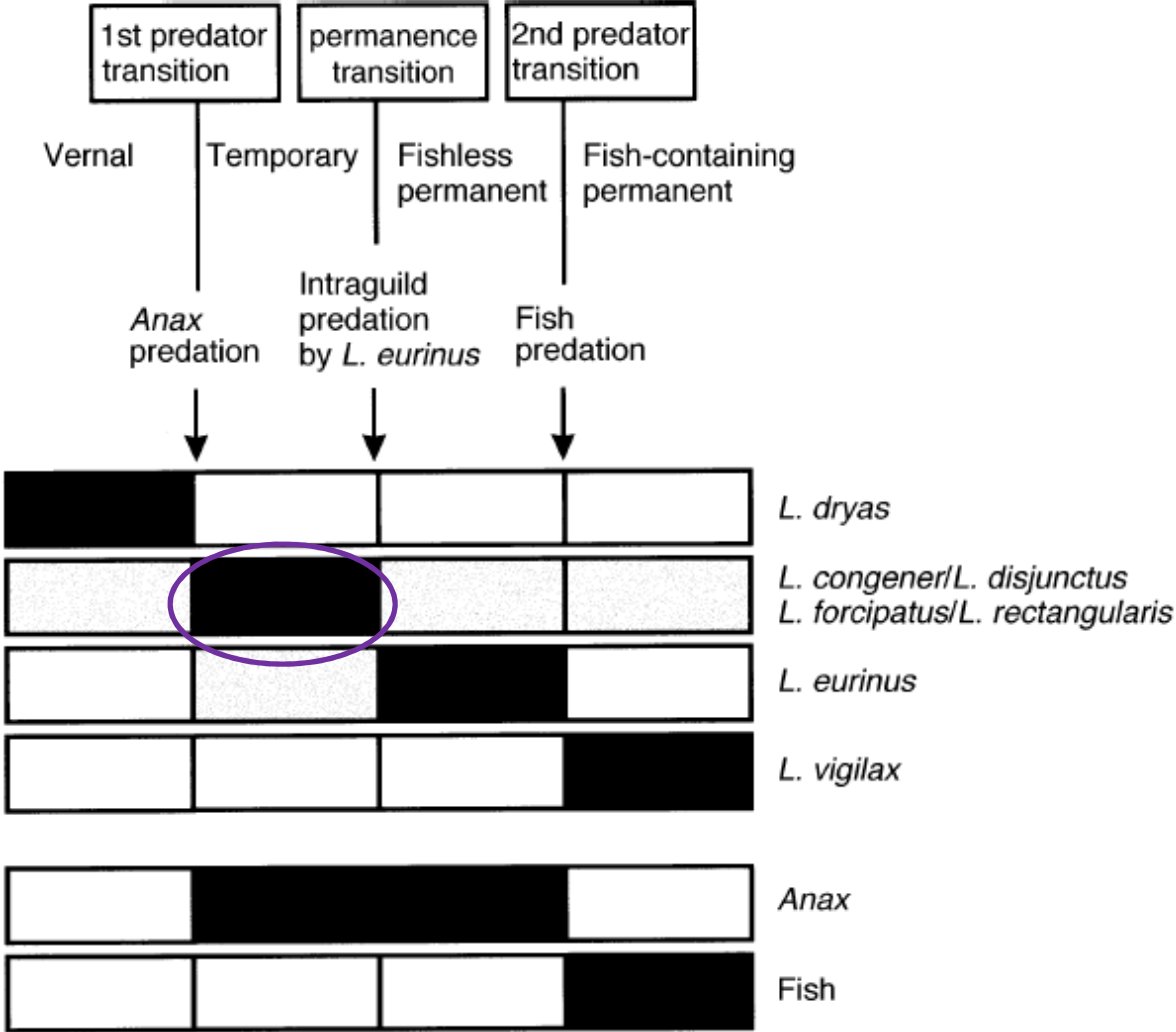
Predatie en droogval

Anax



Predatie en droogval

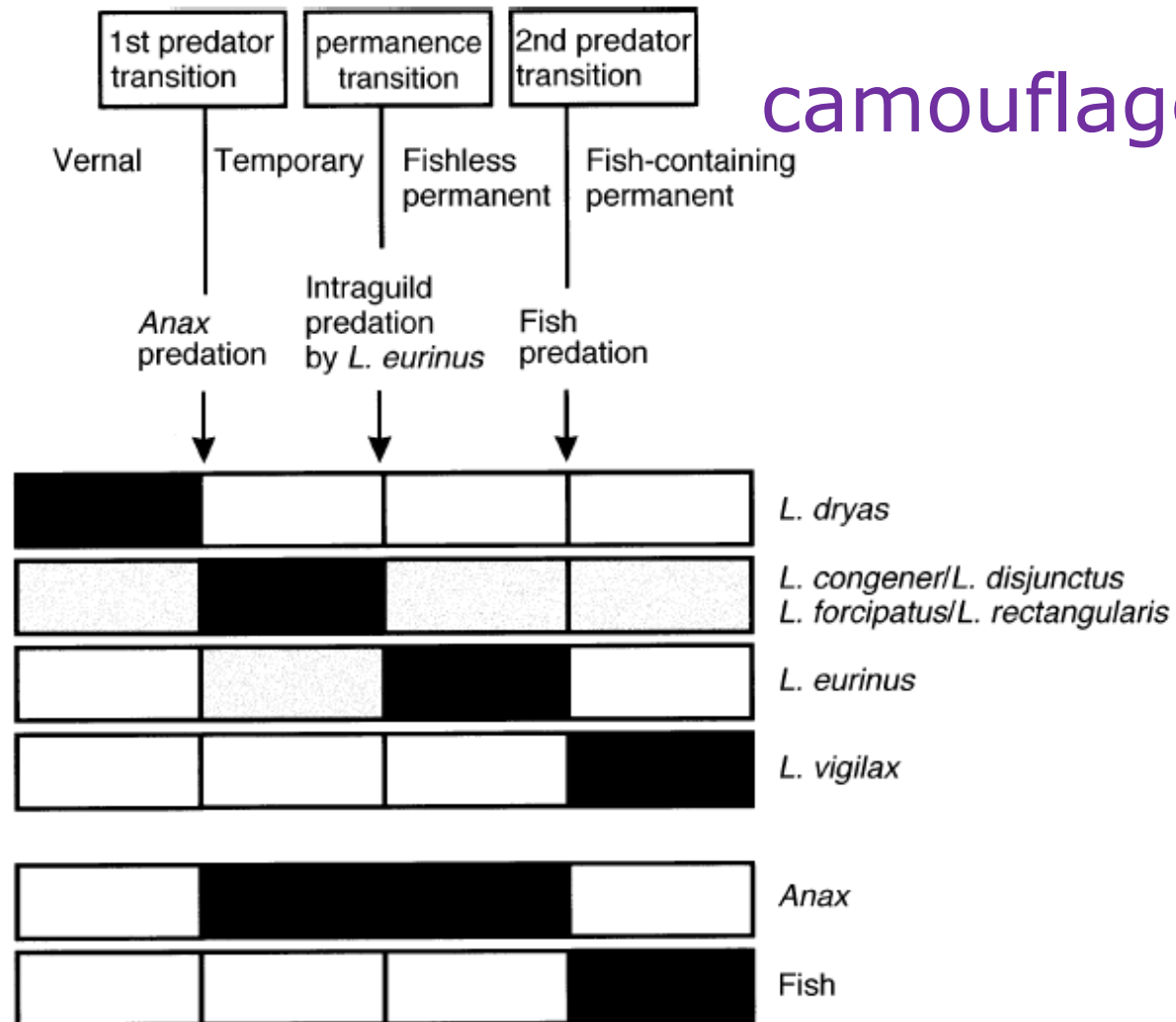
L. eurinus



Predatie en droogval

gedrag,
larvale activiteit
camouflage

Vis
Anax
L. eurinus



Zwarte Heidelibel

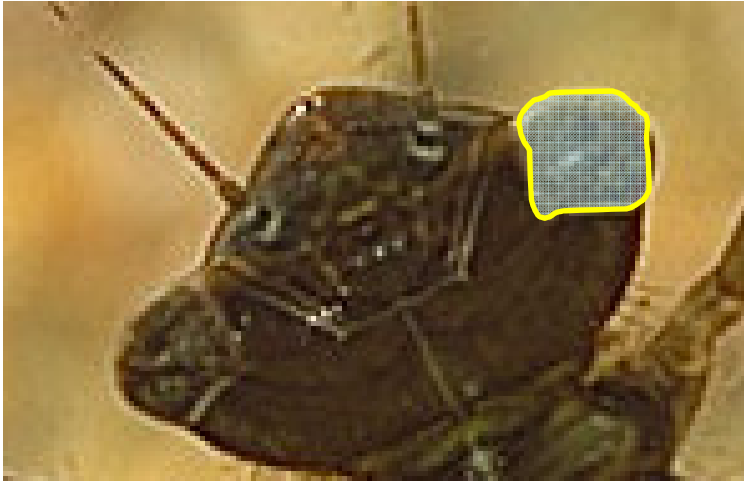
40 dagen



Hoogveenglanslibel

2-5 jaar





Zwarte Heidelibel
40 dagen



Hoogveenglanslibel
2-5 jaar





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Zuurstof



Zuurstof?

Vispredatie?

In combinatie met concurrentie?

Inzicht in koppeling tussen soort en habitat

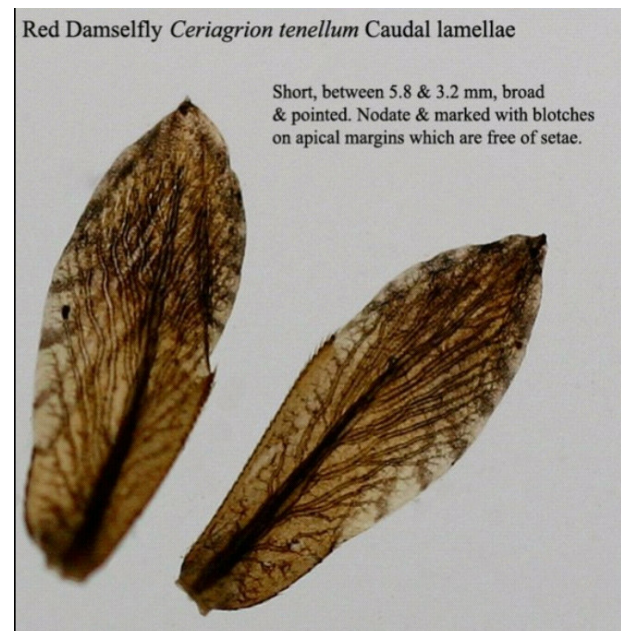
Diverse invalshoeken:

Adulten

Larven

Eieren

Habitat



Inzicht in koppeling tussen soort en habitat

Diverse invalshoeken:

Adulten

Larven

Eieren

Habitat



Soorten zitten verschillend in elkaar:

wijze van paring, dagactiviteit, piek in uitsluipen, periode van uitsluipen, larvale bouw, larvale activiteit, eigrootte, eiaantal, eidiapause, habitat selectie van adulten

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Vanuit kenmerken:

achterhalen van sleutelfactoren; nieuwe inzichten