

# De l'algue au poisson



Bayerisches Staatsministerium für  
Umwelt und Gesundheit

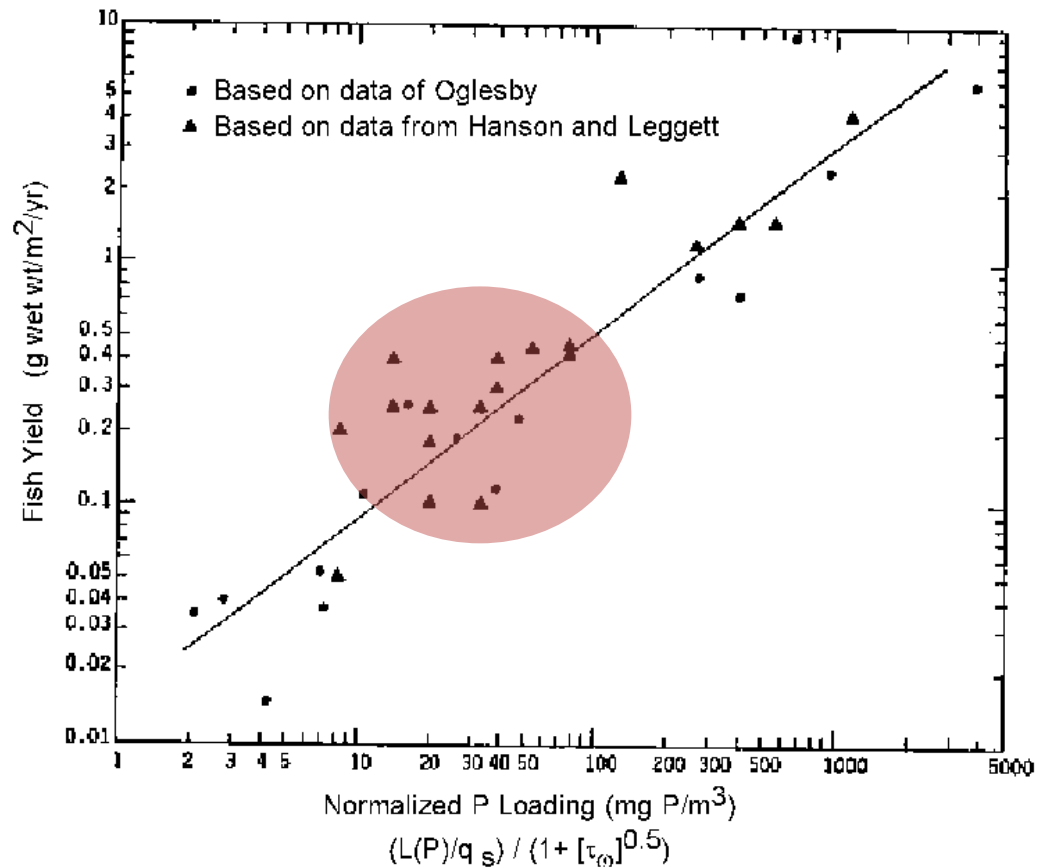


**DFG** Deutsche  
Forschungsgemeinschaft

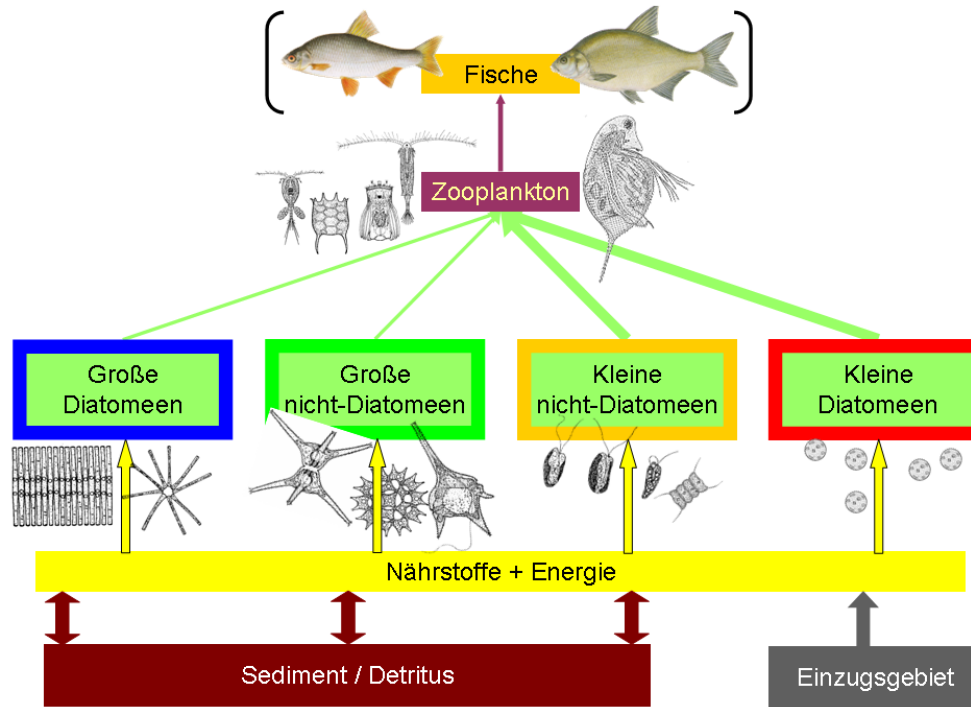
# Du phosphore au poisson

## Relationship between Normalized P Loading and Fish Yield

After Jones and Lee, (1986)

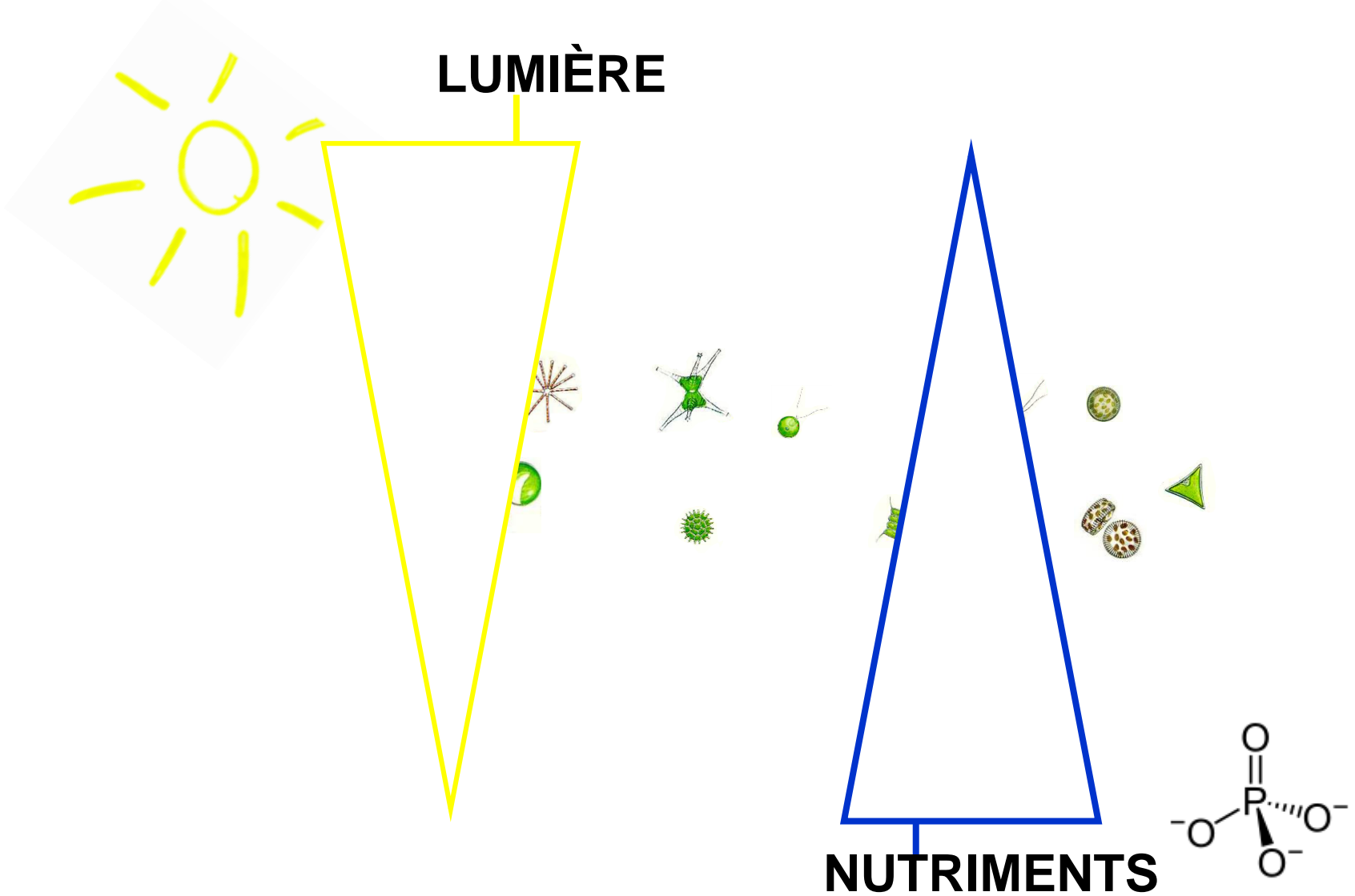


# Réseau alimentaire du lac

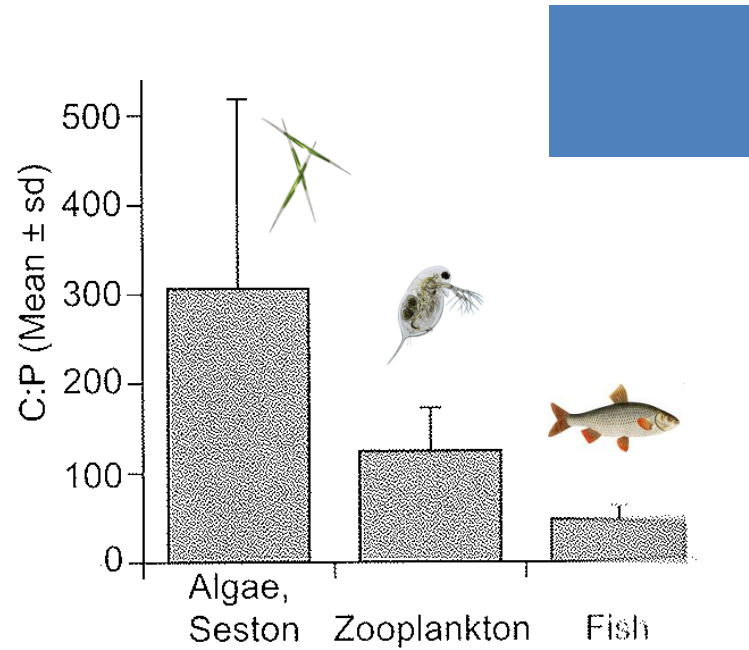




# Stœchiométrie



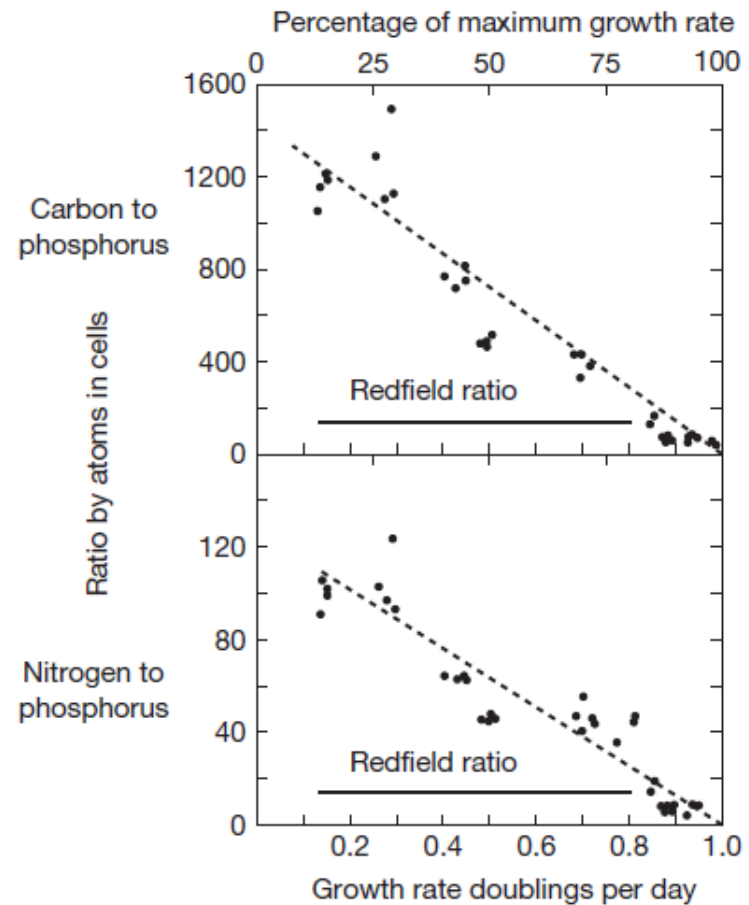
# Stœchiométrie



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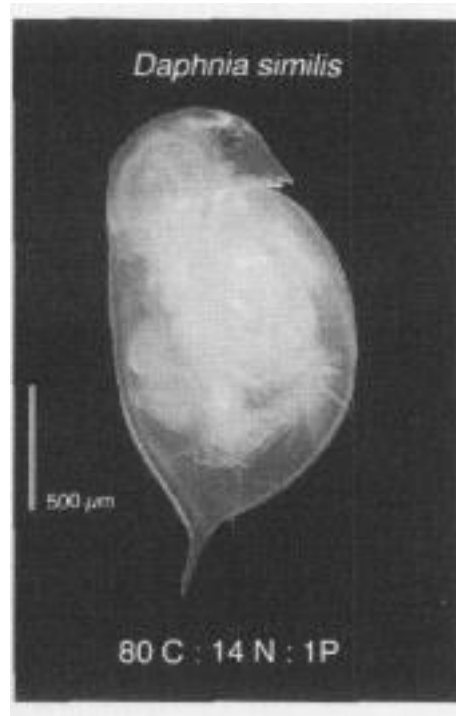
Ration de Redfield:

**C:N:P = 106:16:1**





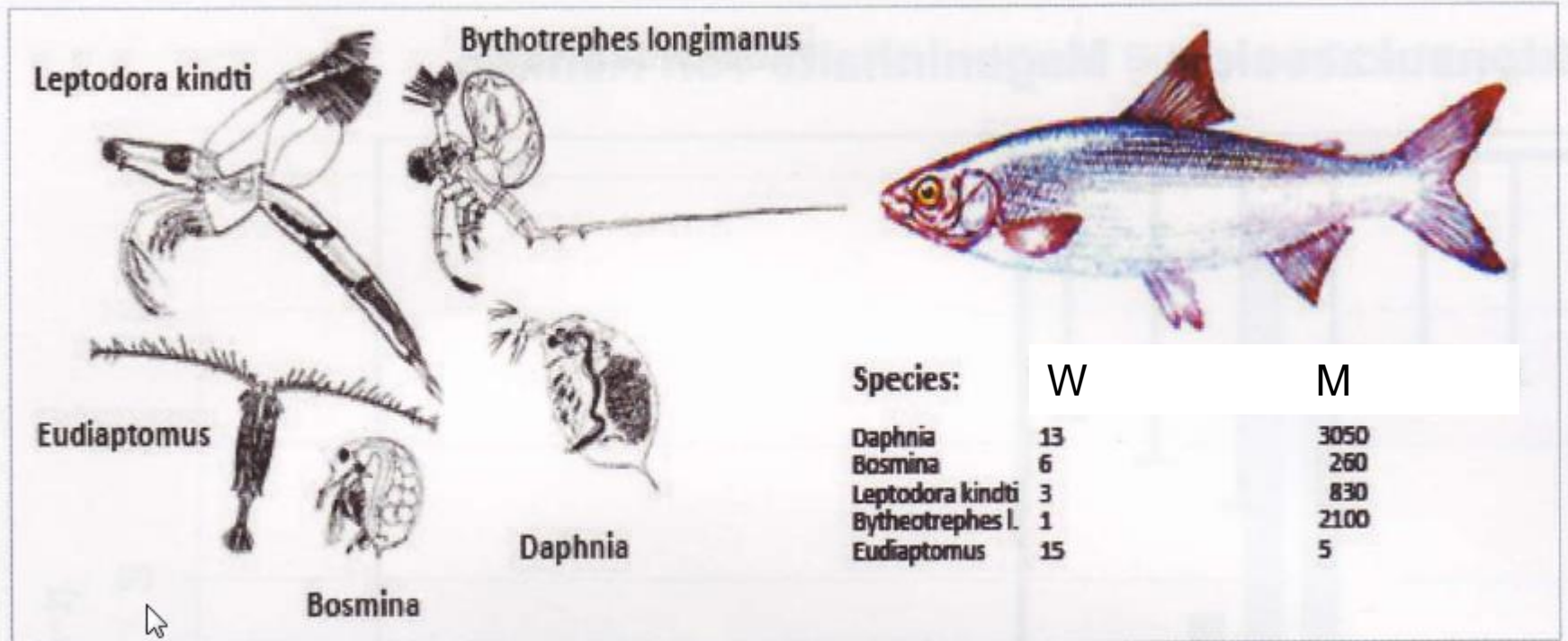
# Stœchiométrie



⇒ Daphnia riche en **P**; Copépode riche en **N**

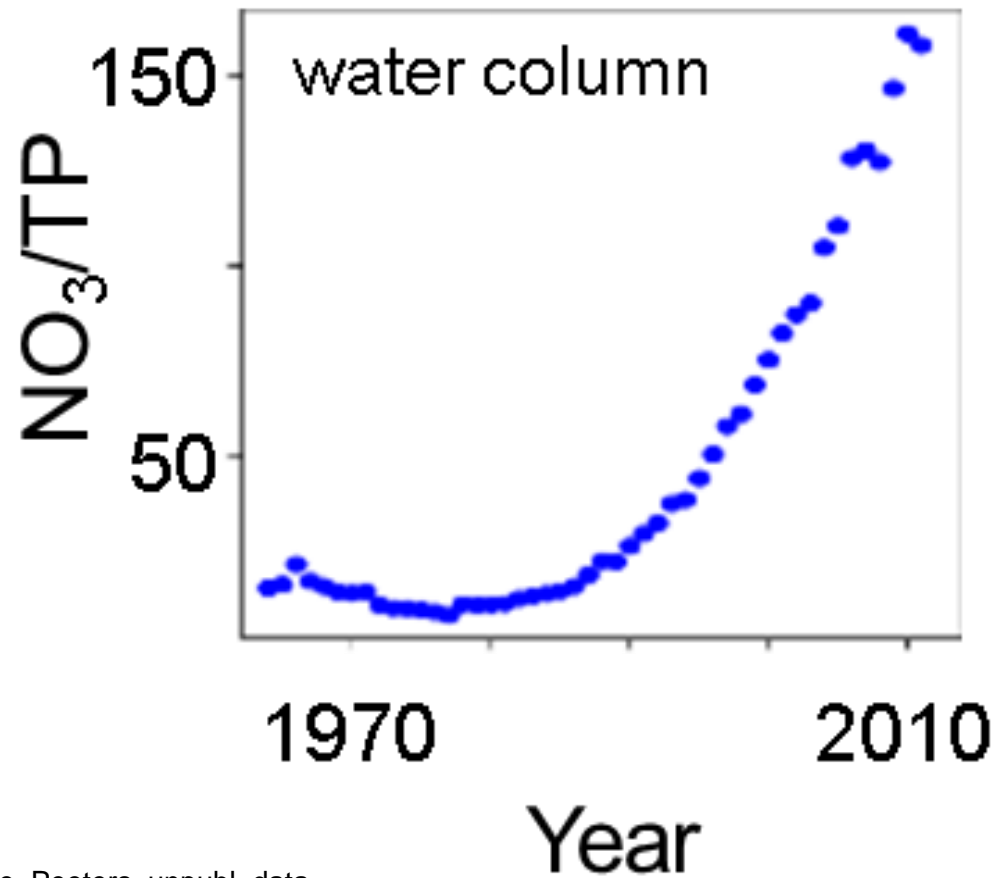


# Sélectivité



Die Renken sind sehr wählerisch. Zwischen der mittleren Zusammensetzung der Zooplankter im Chiemsee und im Renkenmagen ergeben sich erhebliche Unterschiede.

# Lac de Constance



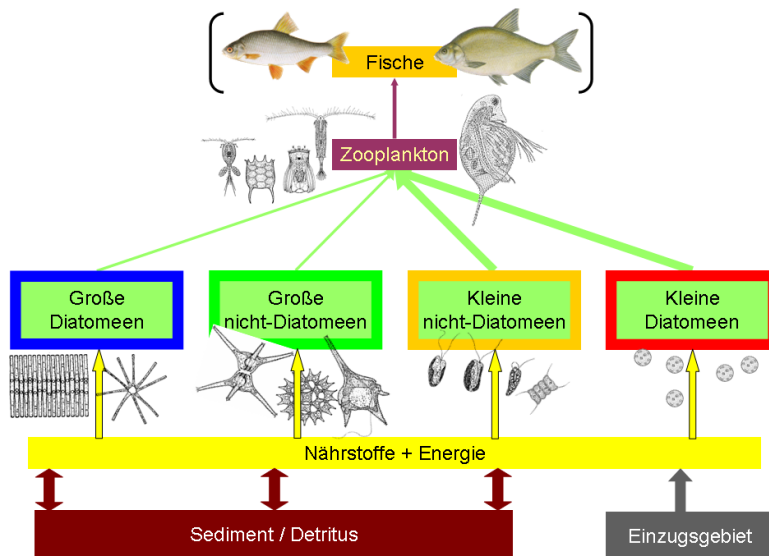
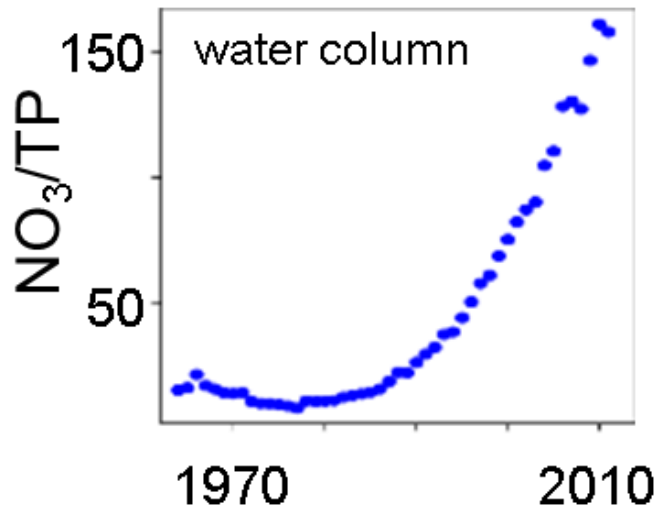
Straile, Peeters, unpubl. data

# Approches expérimentales

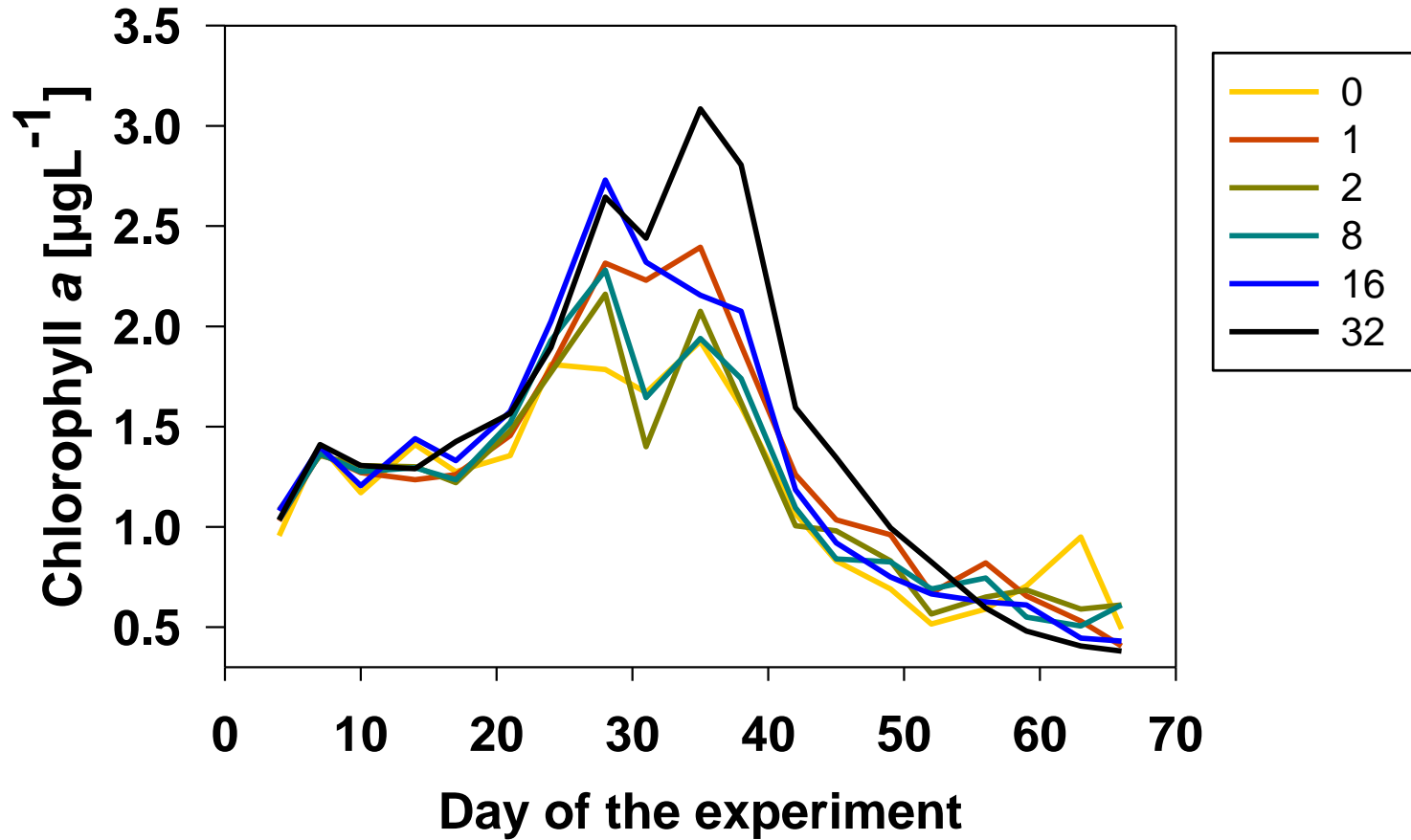




# Modifications dans le plancton

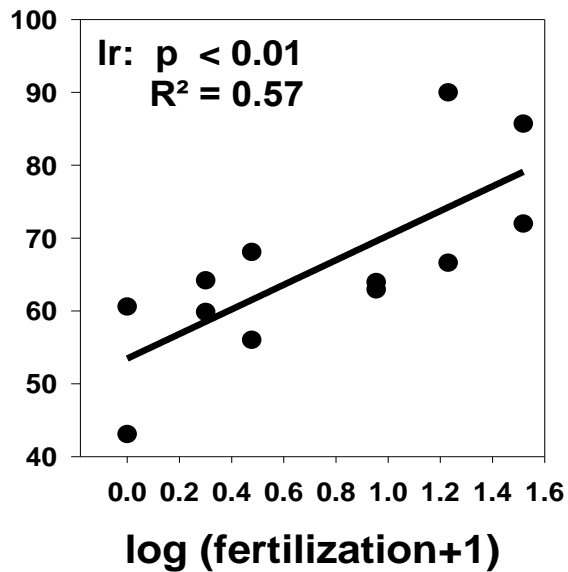


# Phytoplankton

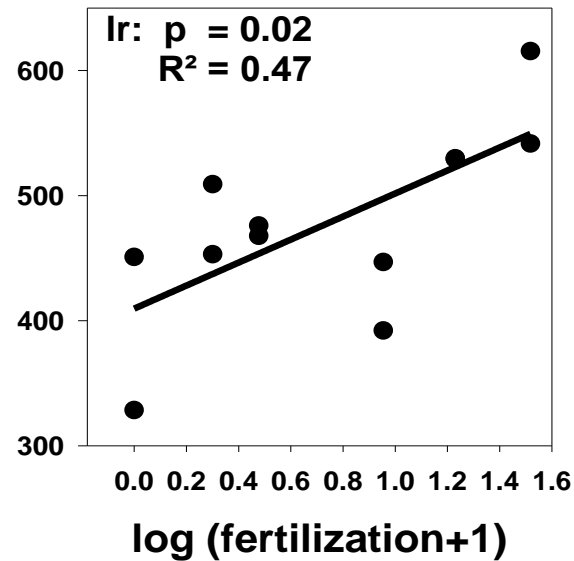


# Stœchiométrie

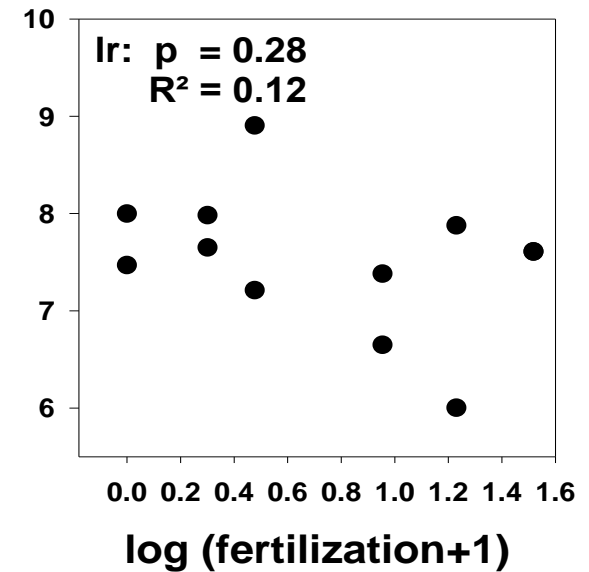
N/P



C/P

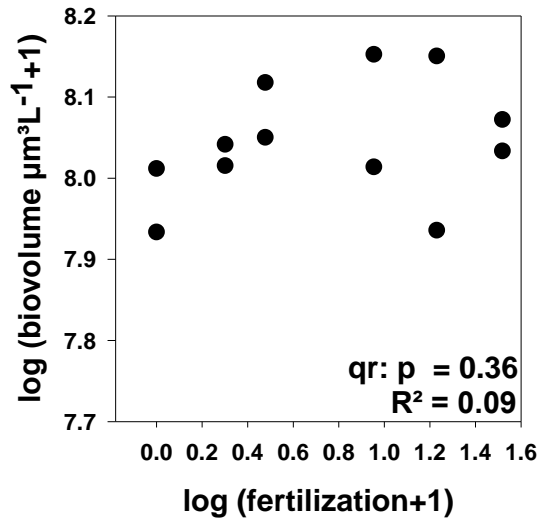


C/N

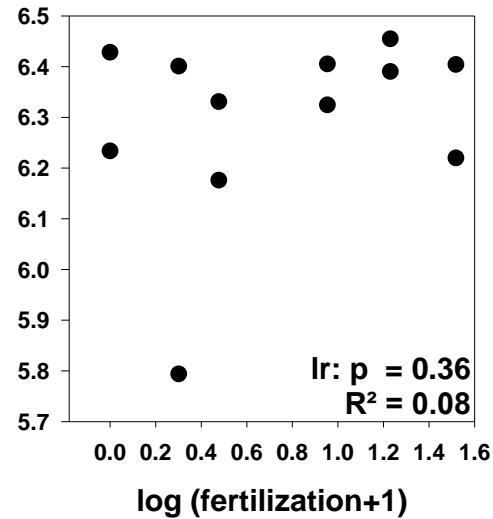


# Modifications taxonomiques

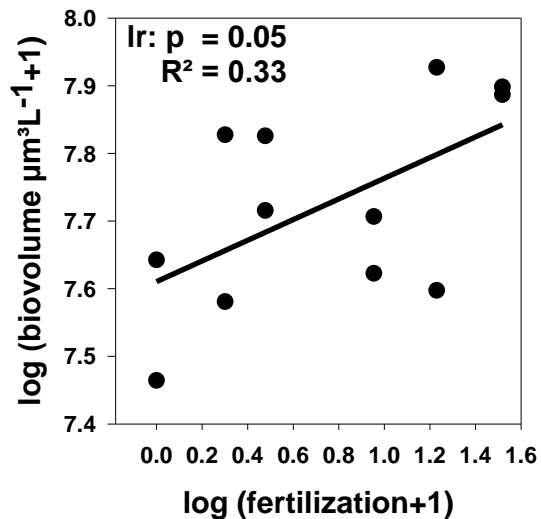
**Bacillariophyceae**



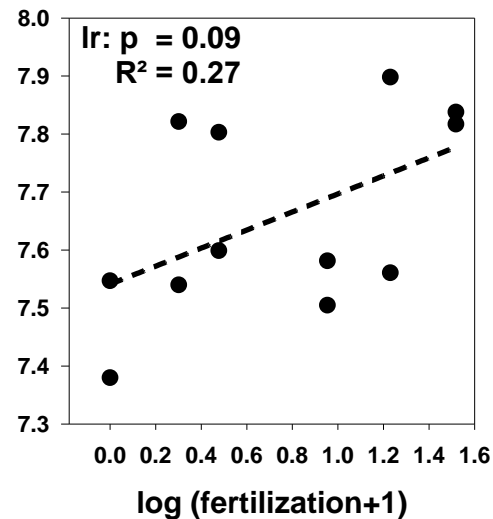
***Fragilaria crotonensis***



**Chrysophytes**



***Dinobryon divergens***

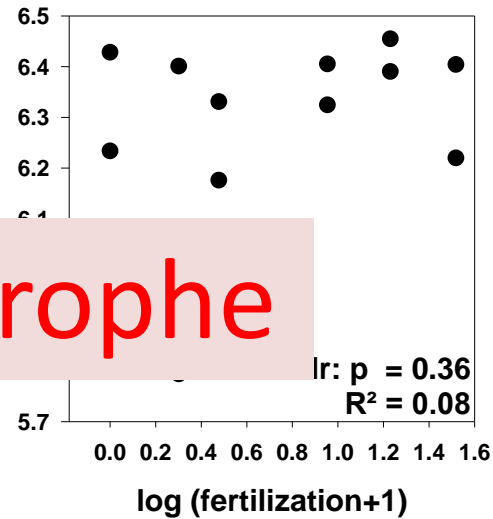
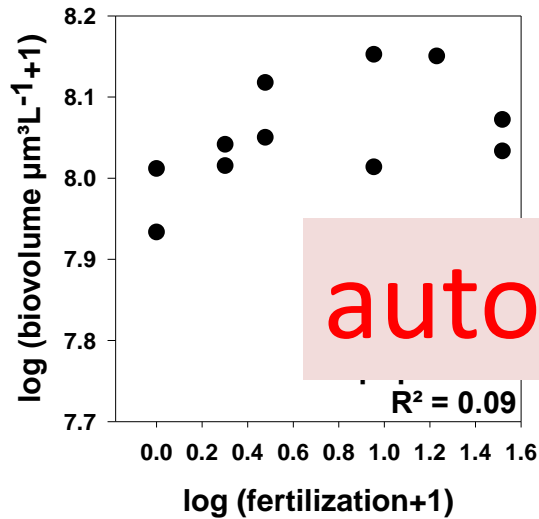




# Modifications taxonomiques

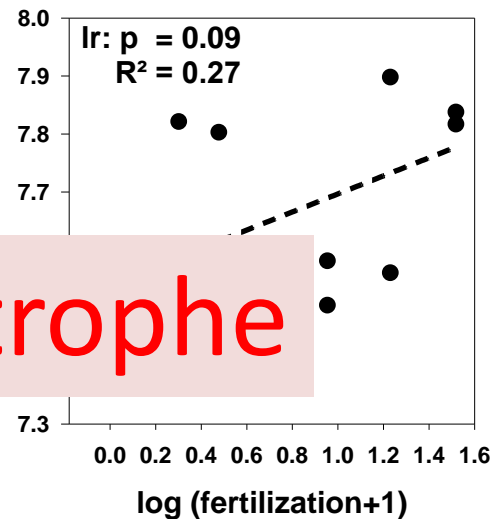
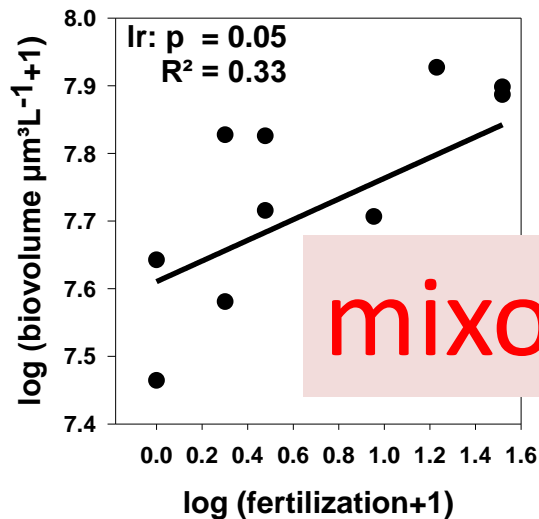
Bacillariophyceae

*Fragilaria crotonensis*

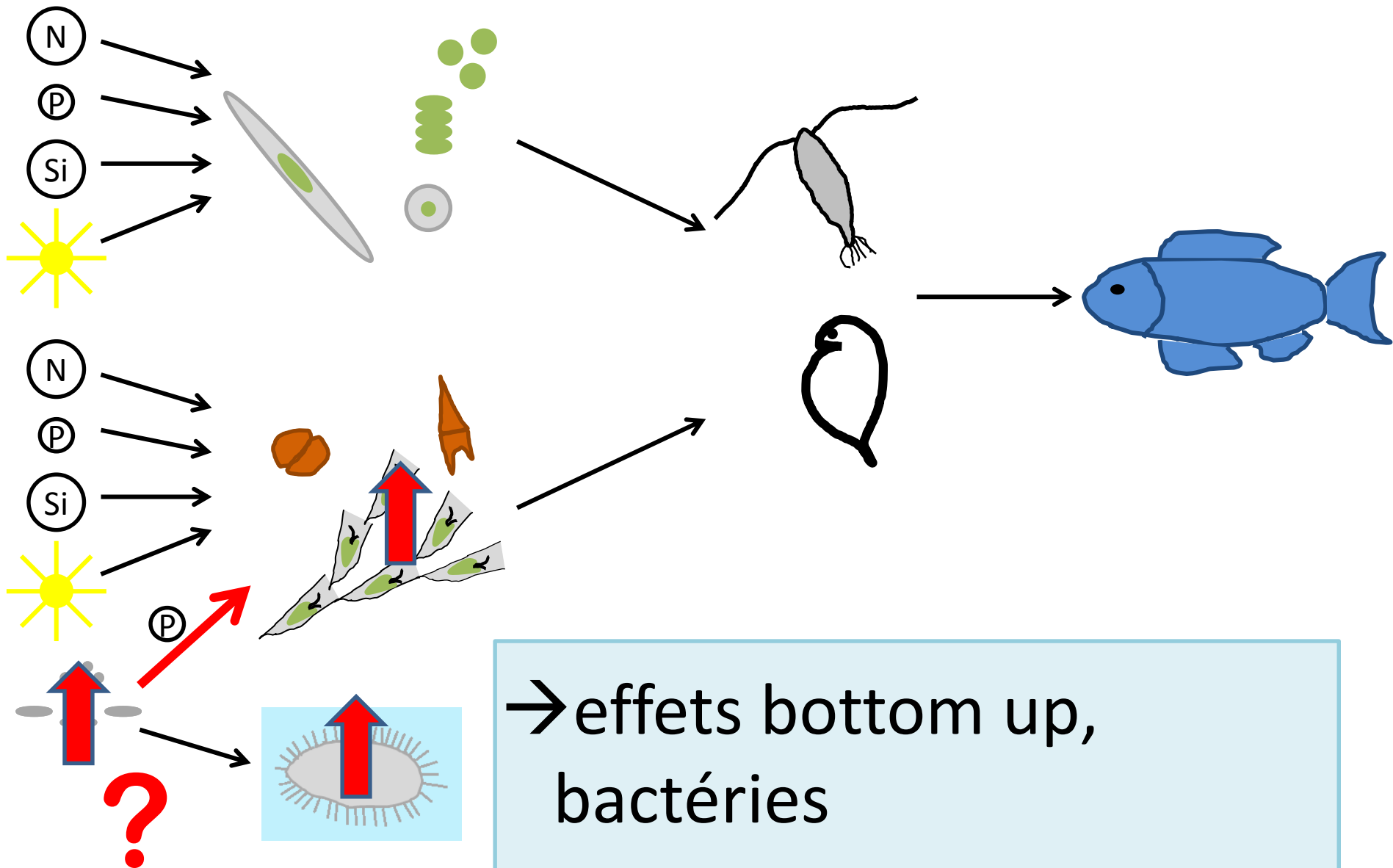


Chrysophytes

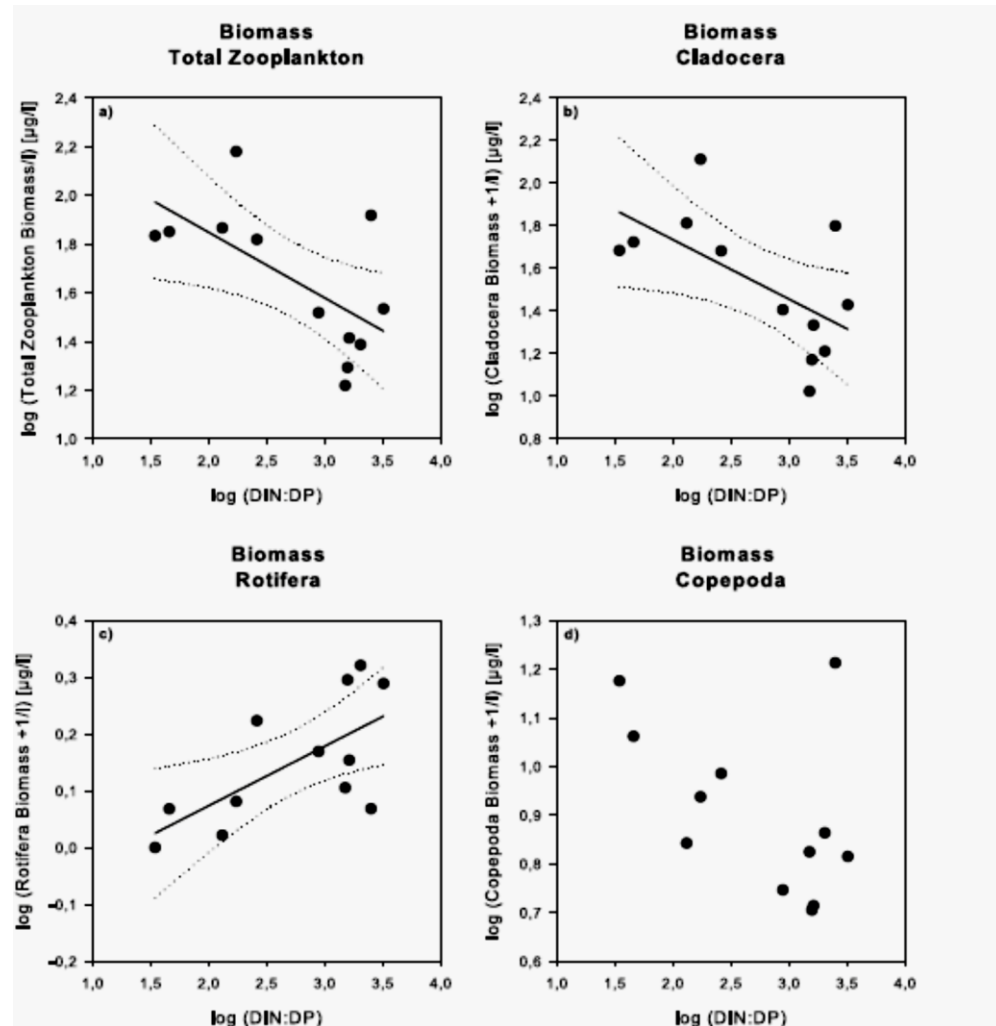
*Dinobryon divergens*



# Mixotrophie

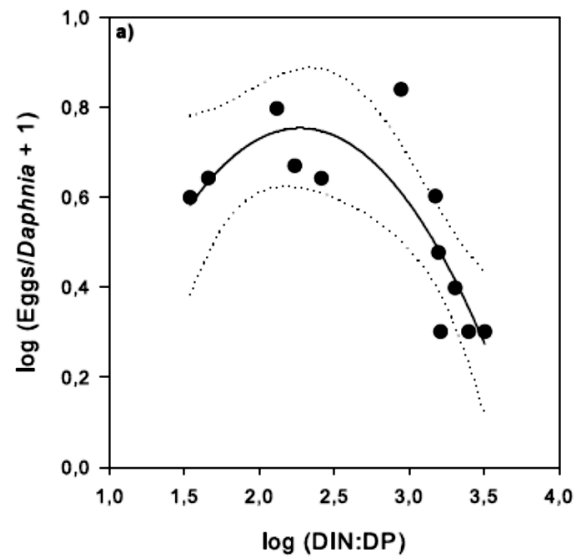


# Zooplankton

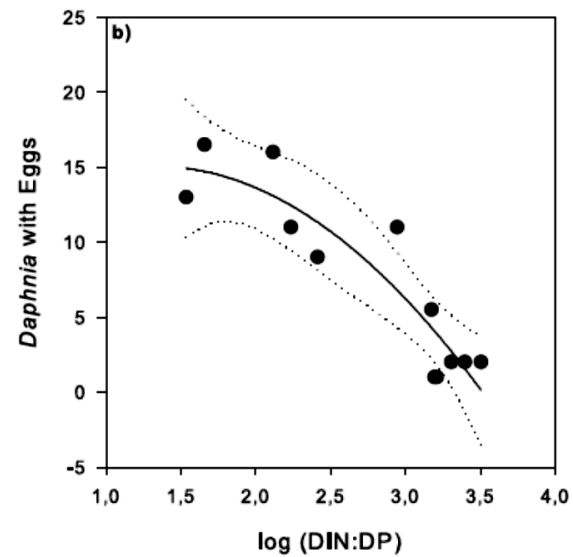


# Zooplankton, Daphnia

**Egg Production *Daphnia***



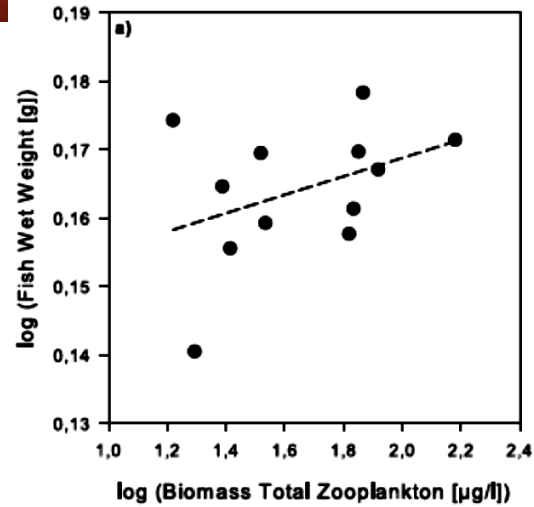
**Egg Carrying *Daphnia***



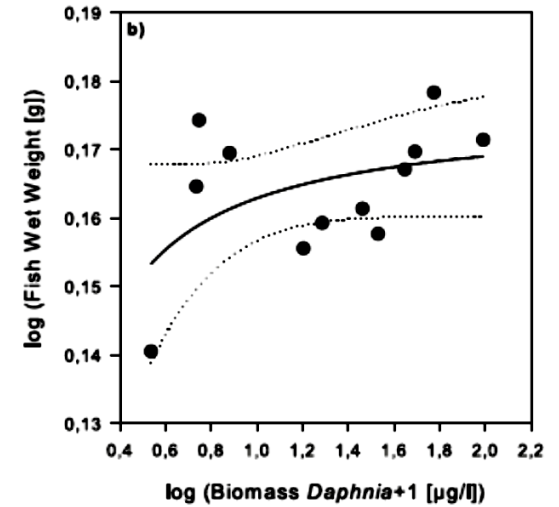
# Croissance des poissons



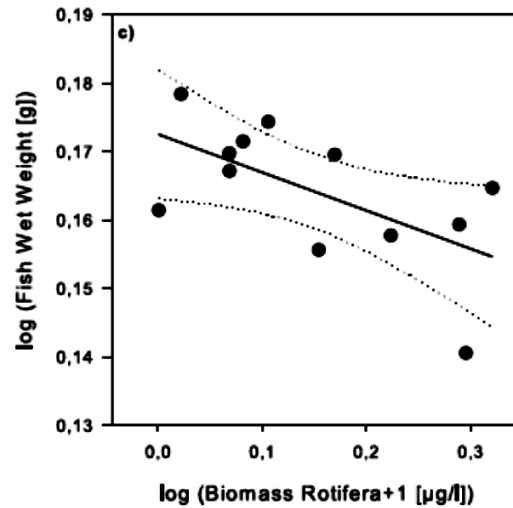
**Biomass  
Total Zooplankton**



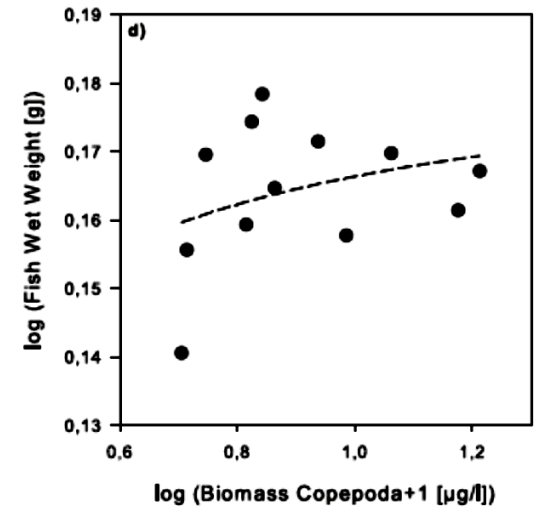
**Biomass  
*Daphnia***



**Biomass  
Rotifera**

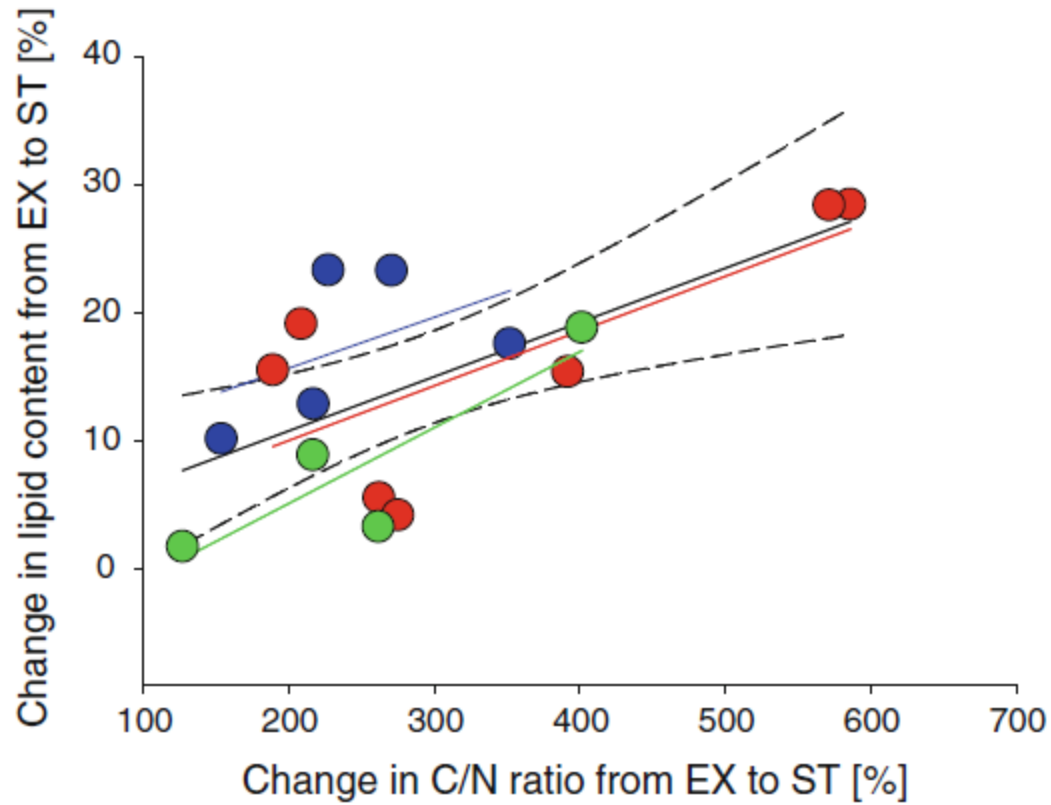


**Biomass  
Copepoda**





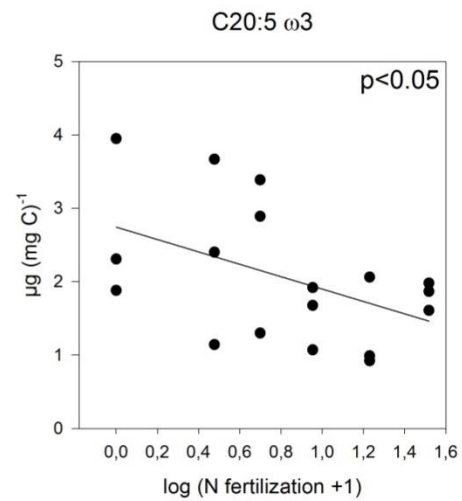
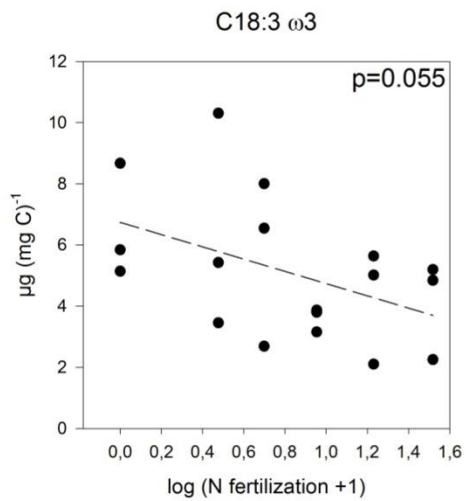
# Acides gras



Schwenk et al. 2013, *Aquat Ecol*, DOI 10.1007/s10452-013-9454-z

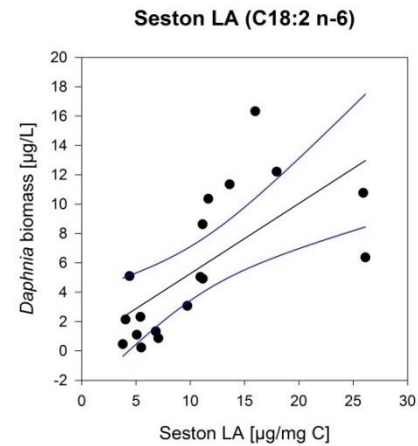
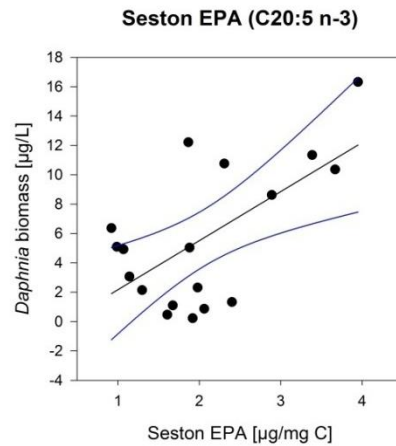
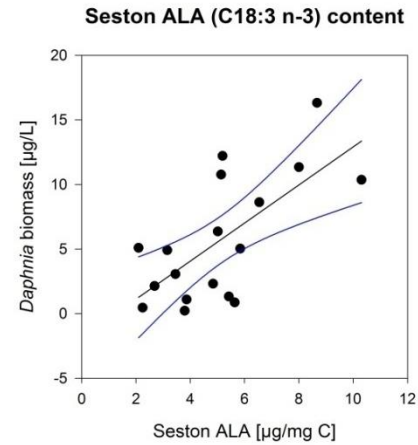
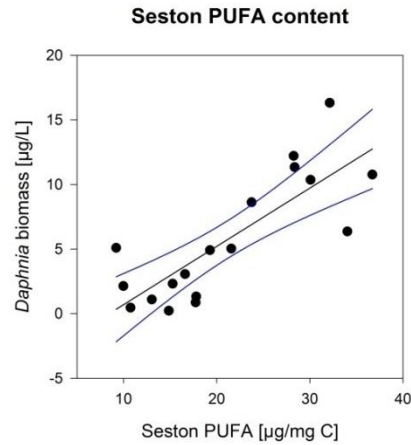


# Acides gras

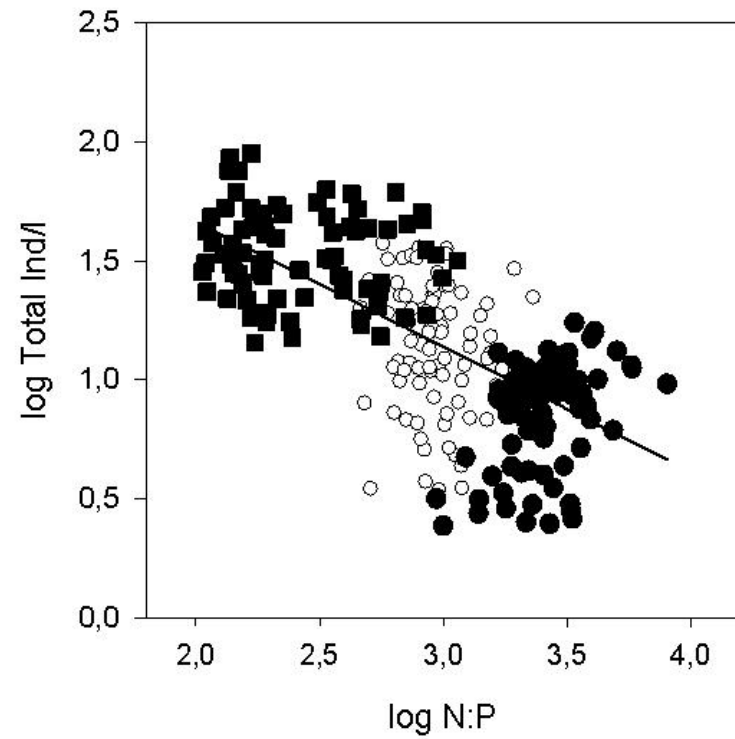
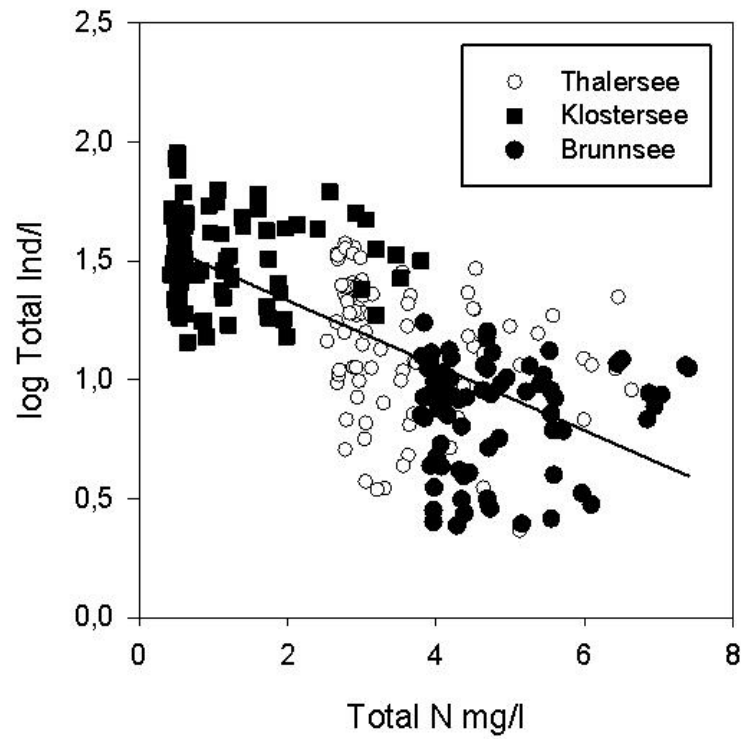


Trommer et al. in prep.

# Acides gras

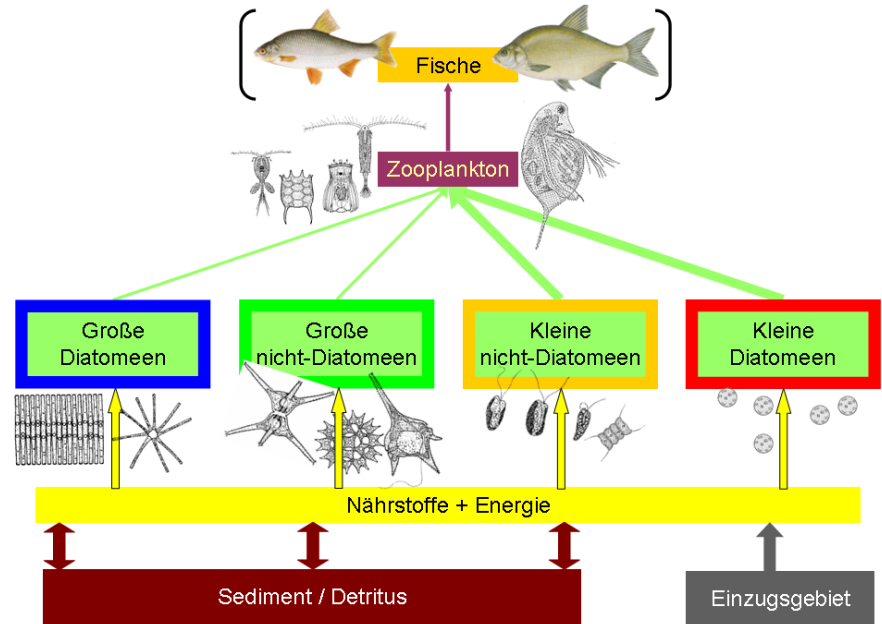
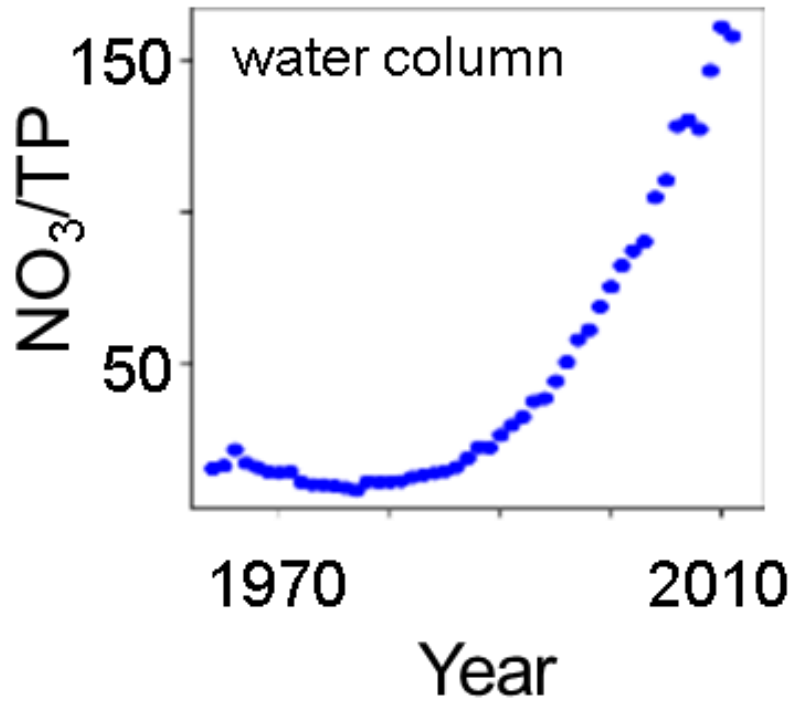


# Zooplankton: N, N:P

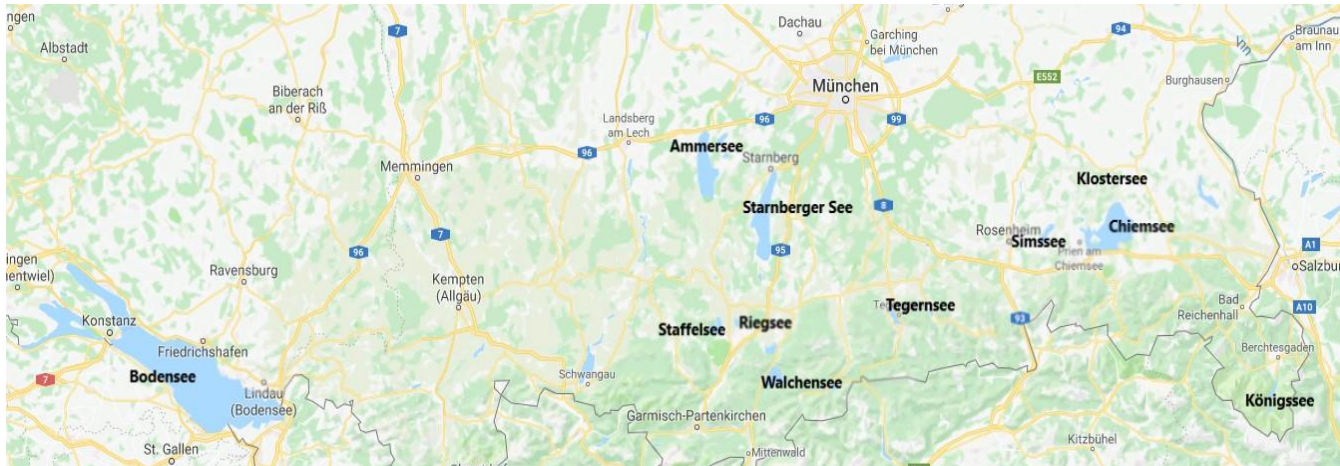


Trommer et al. 2017. *Aquatic Sciences* 79: 1009-102.

# En plein air?



# Lacs de Bavière



Aperçu des lacs examinés.  
(Google Maps, 2018)

## 11 Lacs

Ammersee

Bodensee

Chiemsee

Königssee

Riegsee

Seeoner See

Simssee

Staffelsee

Starnberger See

Tegernsee

Walchensee

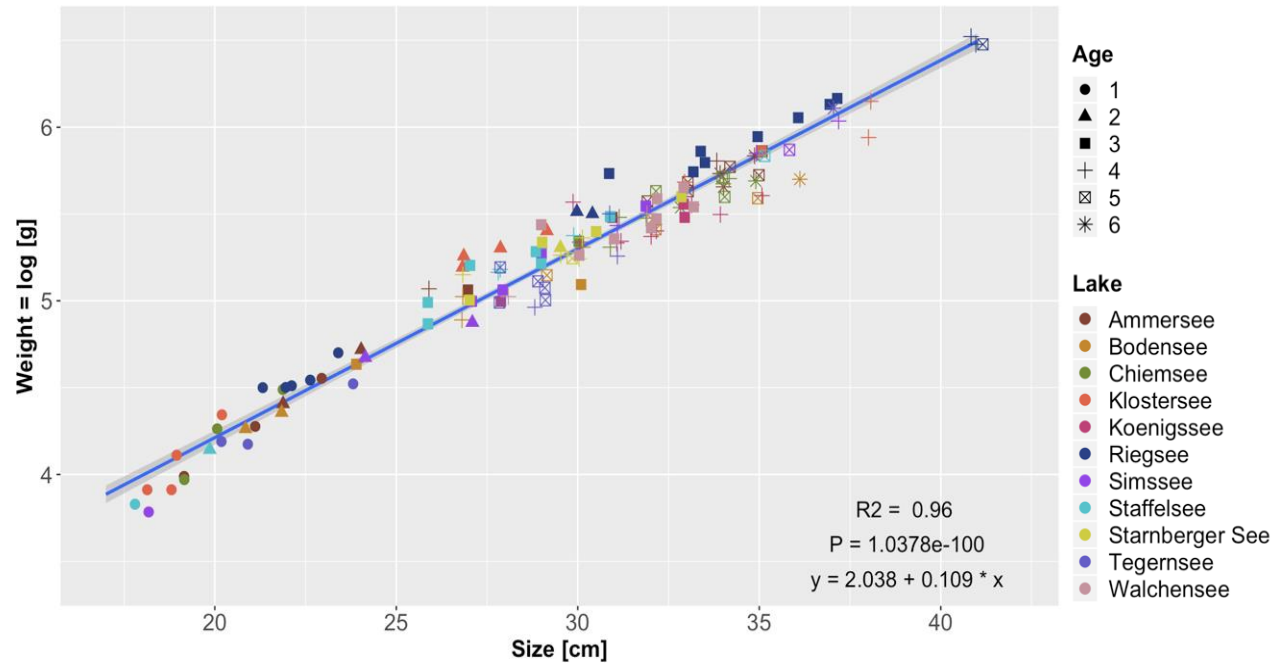
# Lacs de Bavière

See	Koordinaten	Volumen [Mio. m <sup>3</sup> ]	Fläche [km <sup>2</sup> ]	Tiefe <sub>max</sub> [m]	Durchschnittstiefe [m]	EZG [km <sup>2</sup> ]	TP [µg/l]	Trophiestufe
Ammersee	48.03°N, 11.11°E	1750	46,6	81,1	37,6	993	6,9	Oligotroph
Bodensee-Obersee	47.35°N, 12.58°E	48522	571,5	254,0	84,9	11488	6,7	Oligotroph
Chiemsee	47.87°N, 12.45°E	2048	79,9	73,4	25,6	1399	5,3	Oligotroph
Klostersee	47.97°N, 12.45°E	2,8	0,5	16	5,9	4,5	16,2	Mesotroph
Königssee	47.33°N, 12.58°E	511	5,3	189	93,1	137,6	3,6	Ultra-oligotroph
Riegsee	47.22°N, 11.14°E	12,8	2,0	15,4	6,8	0,4	10,7	Mesotroph
Simssee	47.88°N, 12.25°E	87	6,6	22,5	13,4	--	9,1	Oligotroph-mesotroph
Staffelsee	47.69°N, 11.16°E	74,9	7,7	39,4	9,8	80,7	9,7	Oligotroph
Starnberger See	47.91°N, 11.31°E	2999	56,4	127,8	53,2	315	5,3	Oligotroph
Tegernsee	47.72°N, 11.73°E	324	9,1	72,2	36,6	210,5	3,4	Ultra-oligotroph
Walchensee	47.59°N, 11.32°E	1324	16,3	189,5	80,8	779,3	2,6	Ultra-oligotroph



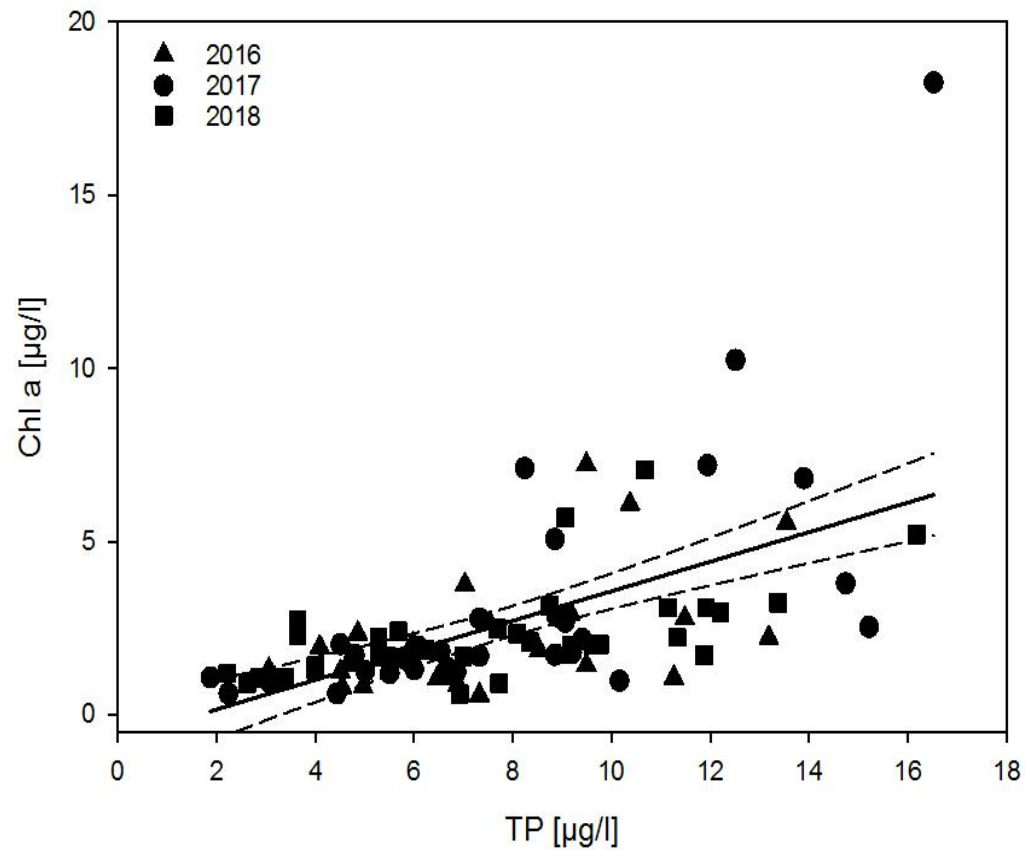


# Lacs de Bavière: croissance des corégones

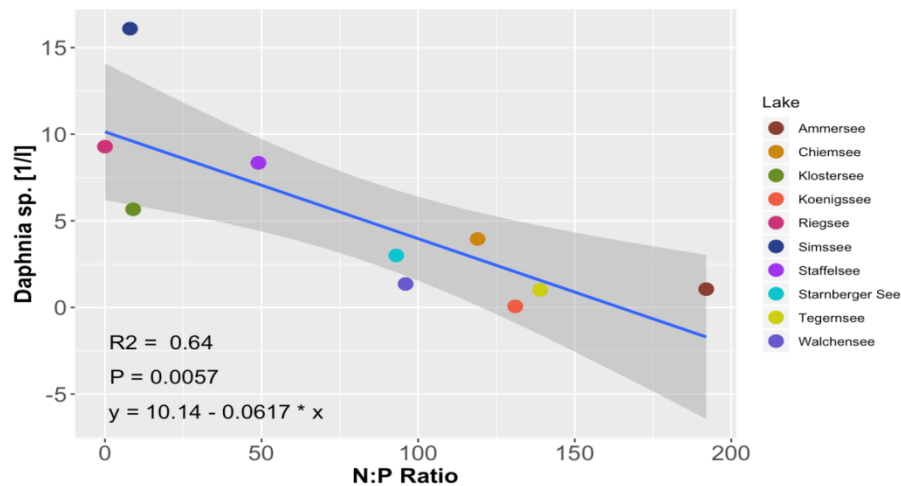
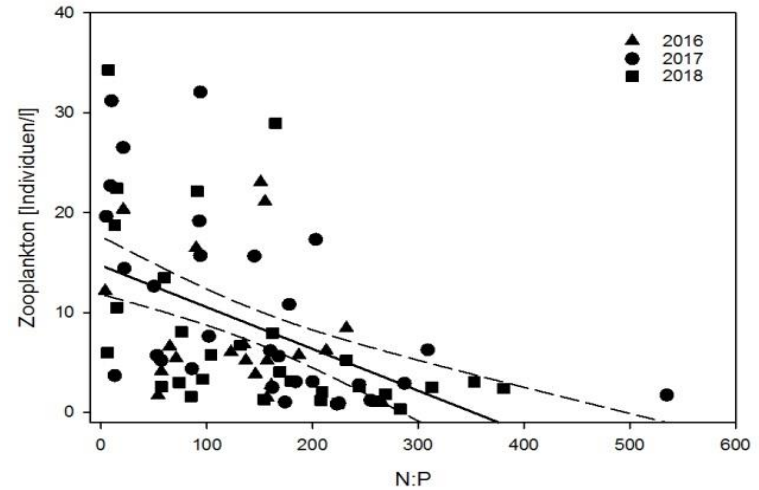
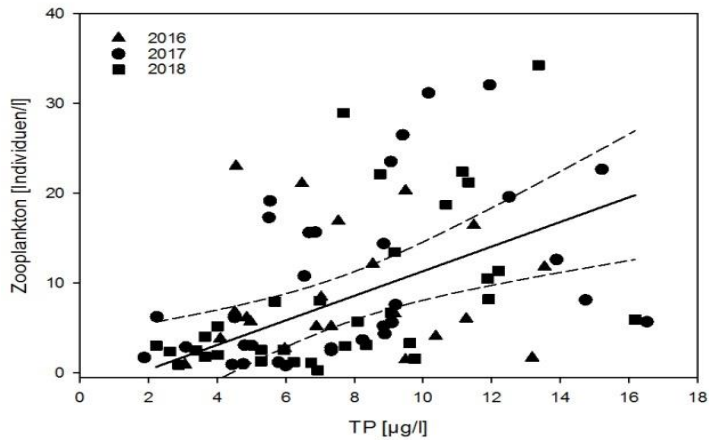




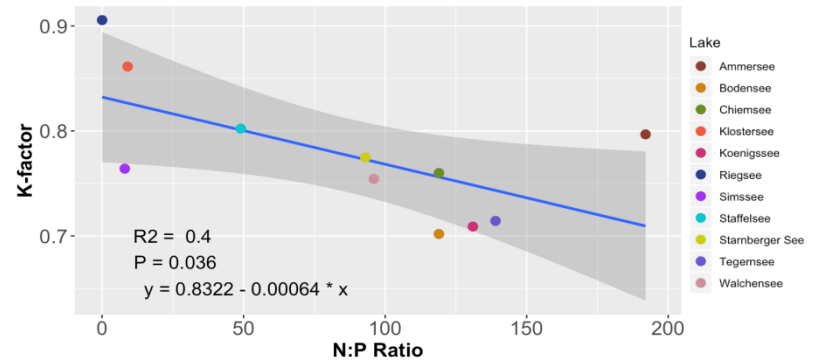
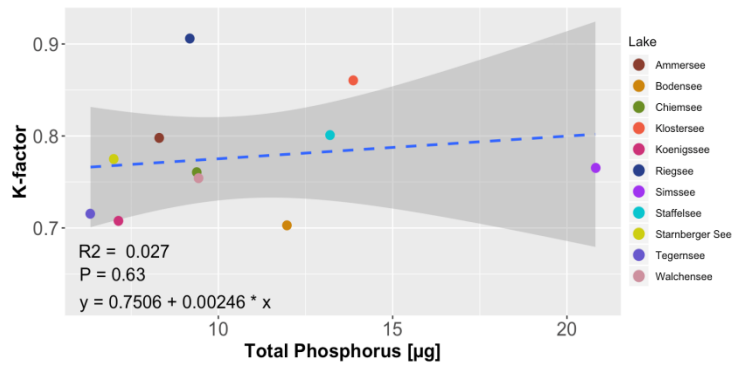
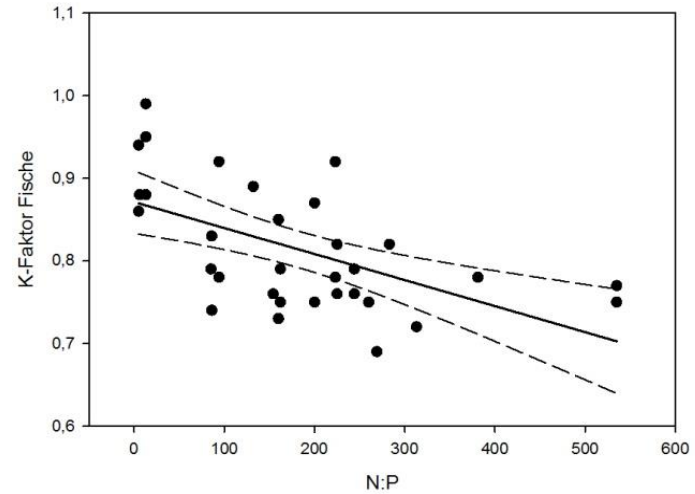
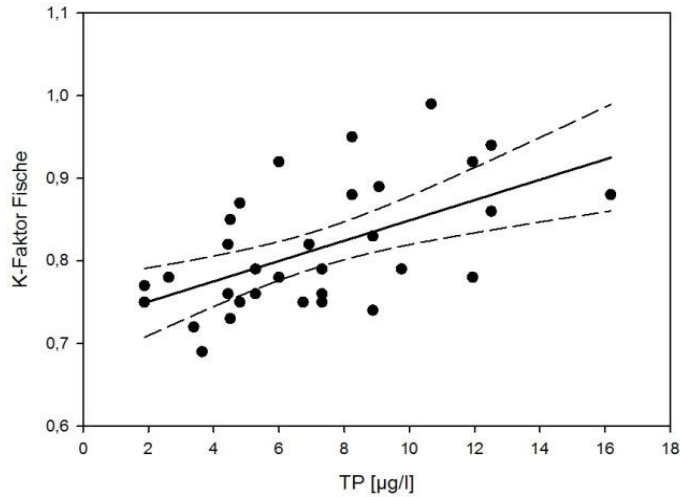
# Lacs de Bavière: P et phytoplancton



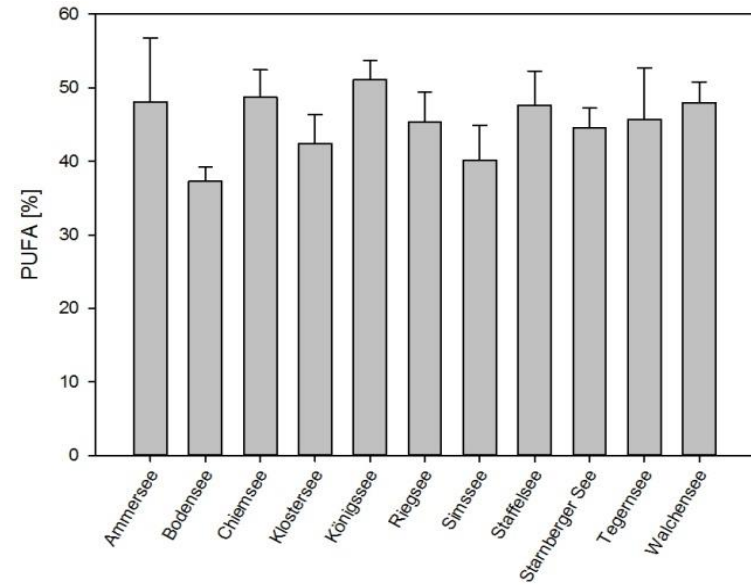
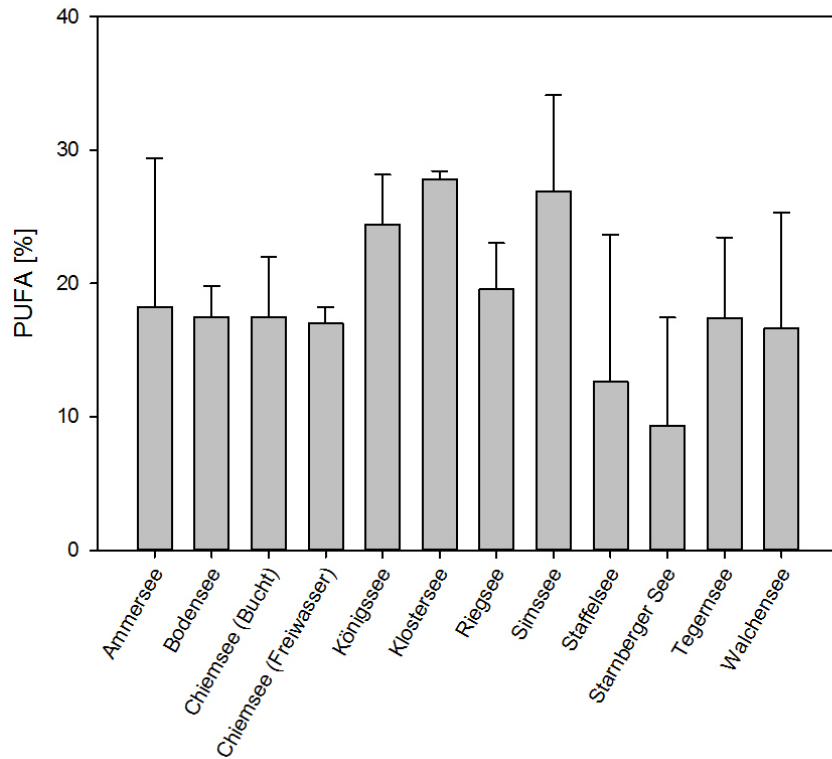
# Lacs de Bavière: P et zooplancton



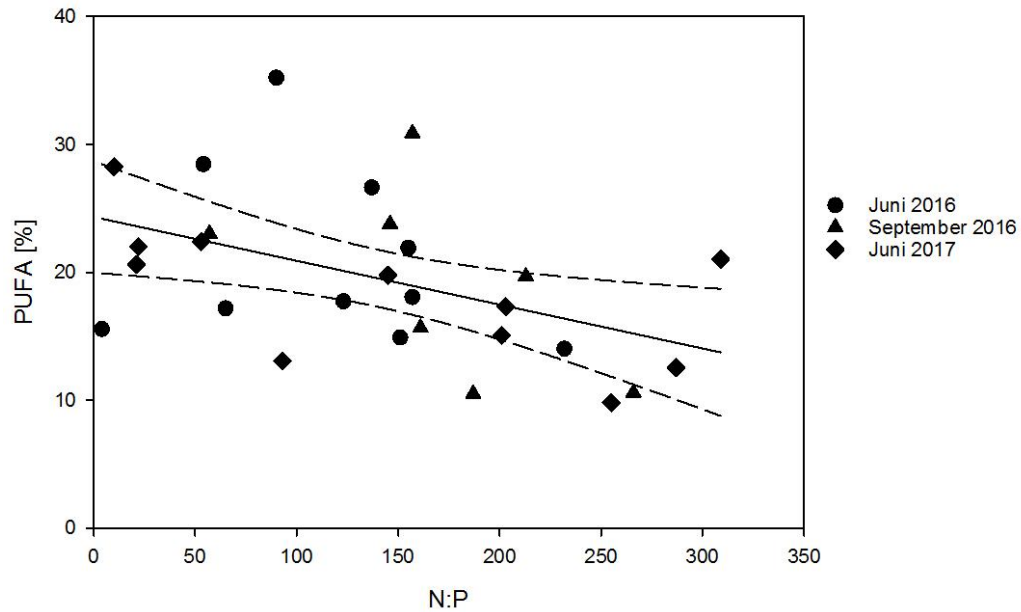
# Lacs de Bavière: P et poissons



# Lacs de Bavière: acides gras



# Lacs de Bavière: acides gras & N:P



# Modifications dans le plancton

