Table 3. Values of physical parameters used in the Buffalo Slough Model.

Basin area	76,520 m2
Basin volume	153,050 m3
Depth of reactive sediment	0.1 m
Volume of reactive sediment	7,650 m3
Groundwater inflow	21,600 m3/day
Stormwater inflow	2,400 m3/day
Total suspended solids in stormwater	220 mg/L
Total suspended solids in Buffalo Slough	16 mg/L
Sedimentation velocity	1.0 m/~~s~~ d

Table 4. Values of chemical parameters used in the Buffalo Slough Model.

Parameter	1254	1260	Chlordane
log Kow	6.04	6.91	6.00
log Koc (sediments)	5.08	5.85	5.06
Initial sediment concentration, kg/kg	3.3E-08	3.3E-08	2.4E-09
Initial conc. on stormwater particles, kg/kg	3.5E-08	2.5E-0~~8~~9	1.0E-09
Adsorption rate onto suspended particles, 1/day	10	10	10
Desorption rate from suspended particles, 1/day	1E-04	1E-05	1E-04

Table 5. Values of biological parameters used in the Buffalo Slough Model.

Parameter	1254	1260	Chlordane
Phytoplankton sorption coefficient, Kph	15,000	150,000	15,000
Phytoplankton lipid content, Lph	0.01	0.01	0.01
Dry weight of phytoplankton, Mph (kg)	5,000	5,000	5,000
Zooplankton consumption rate, cz (kg/kg/d)	0.3	0.3	0.3
Zooplankton assimilation rate, az	0.5	0.5	0.5
Zooplankton excretion rate, kez (1/d)	0.01	0.004	0.01
Dry weight of zooplankton, Mz (kg)	500	500	500
Carp consumption rate, cf (kg/kg/d)	0.02	0.02	0.02
Carp assimilation rate, af	0.5	0.5	0.5
Carp excretion rate, kef (1/d)	0.001	0.0004	0.001
Dry weight of carp, Mf (kg)	50	50	50

"f_{lipid}"

$$C_{ph} = K_{pH} C_w = L_{pH} K_{ow}$$

Uptake into zoop's & fish: see model, next page.

At steady state: Uptake = Excretion

E.g. $$\left.\frac{dM_{fish}}{dt}\right|_{up} = \left.\frac{dM_{fish}}{dt}\right|_{exer.}$$

See next page.

Level 3 Stella

ZOOP/CARP UPTAKE & EXCRETION

Can assume that for $\log K_{ow} = 6-7$ (as we have) that food & feces are the major pathways and gill uptake/loss is safely neglected

Uptake

$$\left.\frac{dM_f}{dt}\right|^{u} = a_f \, c_f \, C_z \, M_{fb}$$

$$\left[\frac{kg_a}{d}\right]^{u}_{f} = \underset{\text{efficiency}}{[-]} \left[\frac{kg_z}{kg_f\,d}\right]\left[\frac{kg_a}{kg_z}\right]\left[kg_f\right]$$

For zoops: $\frac{dM_z}{dt} = a_z c_z C_{ph} M_{zb}$

Excretion

$$\left.\frac{dM}{dt}\right|^{E} = k_{Ef} M_f$$

Note that k_{Ef} is already lipid normalized, as per Thomann's '81 data

$$\left[\frac{kg_a}{d}\right]^{u}_{f} = \left[\frac{1}{d}\right]\left[kg_a^f\right]$$

For zoops: $\frac{dM_z}{dt} = k_{Ez} M_z$

At ~steady state

$$\overbrace{a_f \, c_f \, C_z \, M_{fb}}^{\text{UPTAKE}} = \overbrace{k_{Ef} M_f}^{\text{EXCRETION}}$$

$$C_f = \frac{M_f}{M_{zb}} = \frac{a_f c_f C_z}{k_{Ef}}$$

And by extension

$$C_z = \frac{M_z}{M_{zb}} = \frac{a_z c_z C_{ph}}{k_{Ez}}$$

And

$$C_{ph} = \frac{M_{ph}}{M_{phb}} = L_{ph} K_{ph} C_w$$

He Already lipid normalize

Group

$$\boxed{C_f = \frac{a_z a_f c_z c_f L_{ph} K_{ph}}{k_{Ez} k_{Ef}} C_w}$$

$$\boxed{K_{BAF} = \frac{a_z a_f c_z c_f L_{ph} K_{ph}}{k_{Ez} k_{Ef}}}$$

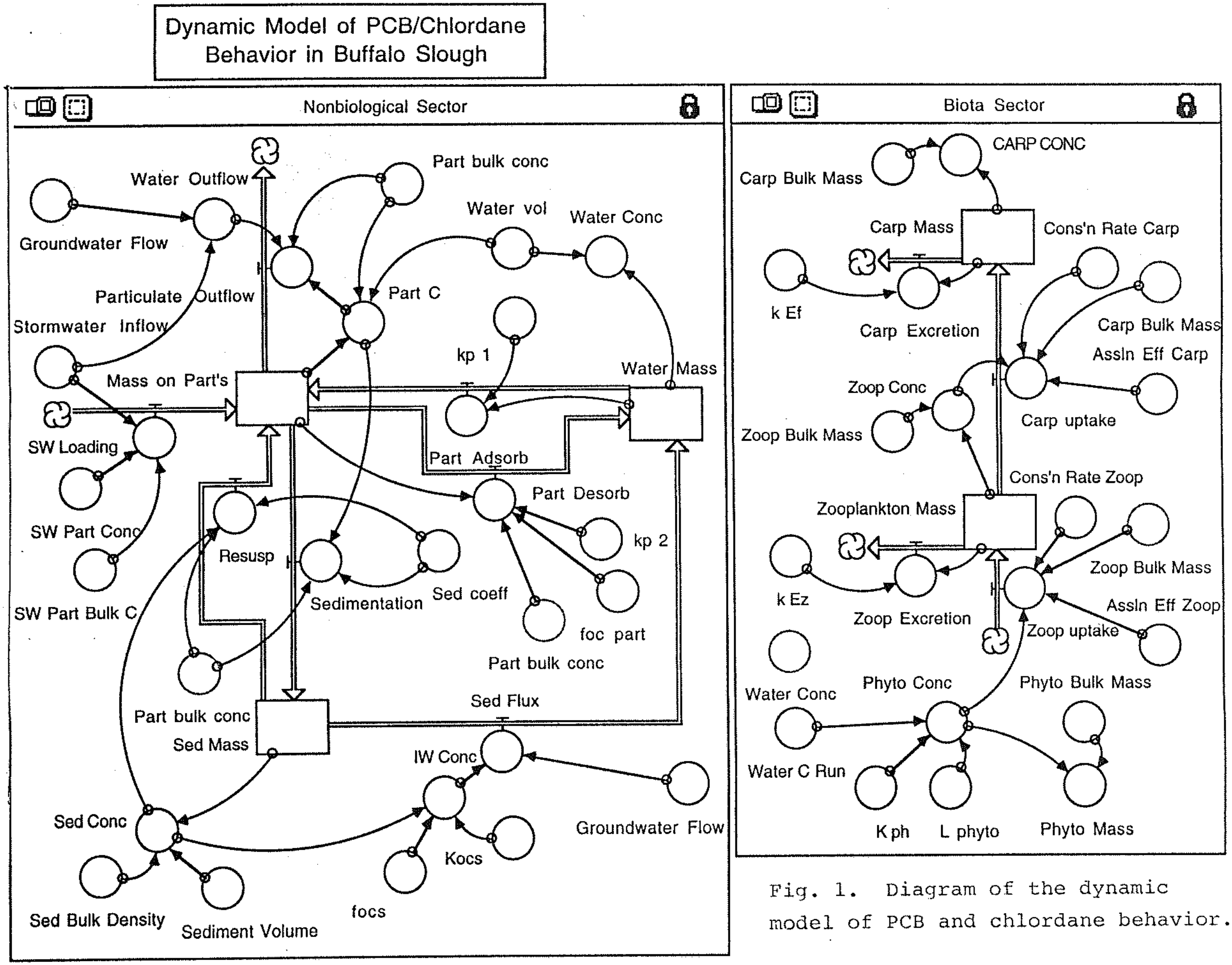

Fig. 1. Diagram of the dynamic model of PCB and chlordane behavior.