Wetland habitats

Limnology

Lecture 13

What is a lake?

Pond ?
Reservoir ?
Wetland ?

Wetland –

area inundated or saturated by water for sufficient time to determine soil and types of plant and animal communities

Legal definition

Depends on state

Federal requires 3 things:

1) Hydric soils

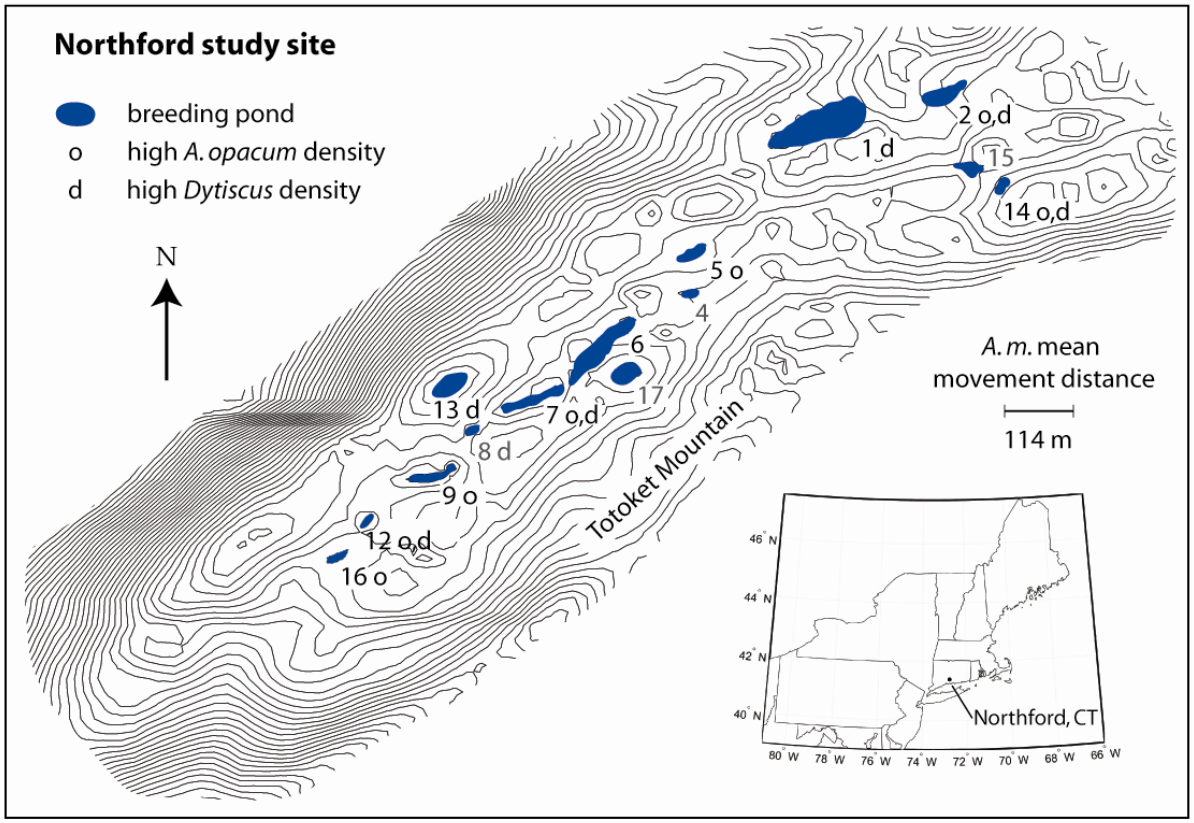
2) Wetland obligate and facultative plants dominate

3) Hydrology

Swamp – woody plants
Marsh – emergent non-woody plants
Bog – peat-forming

Lake, pond, wetland, bog, marsh, or swamp?

Prevalent ponds in CT – why?



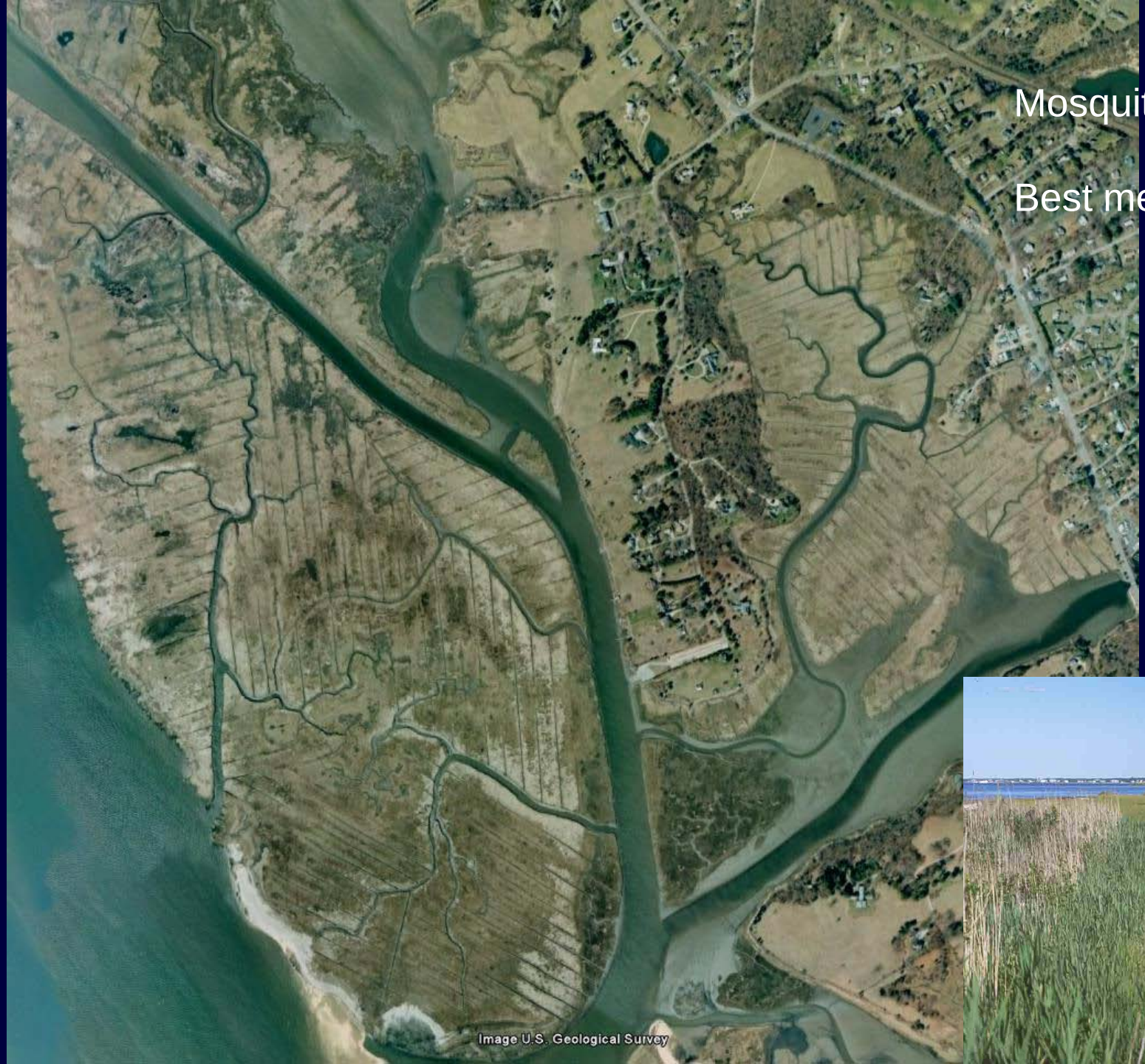
Of major conservation importance

Original wetlands:	670,000 acres
Remaining wetlands:	172,500 acres
Percent lost:	-74%

CT DEP

Mosquito ditching

Best method?



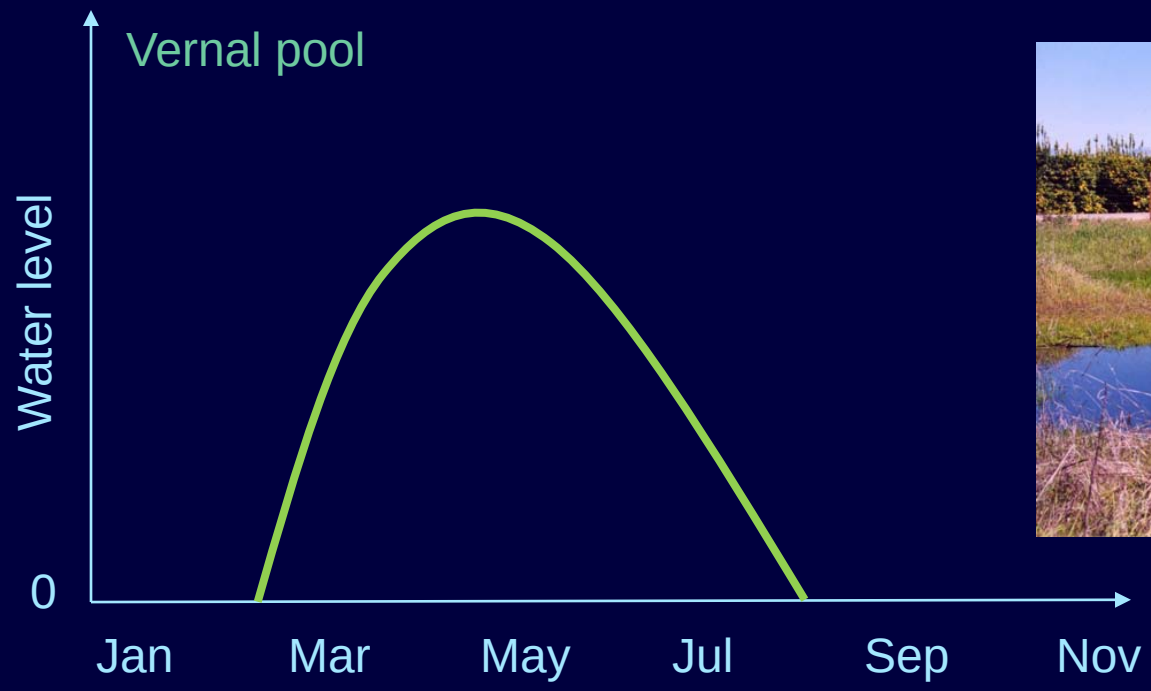
Mosquito control

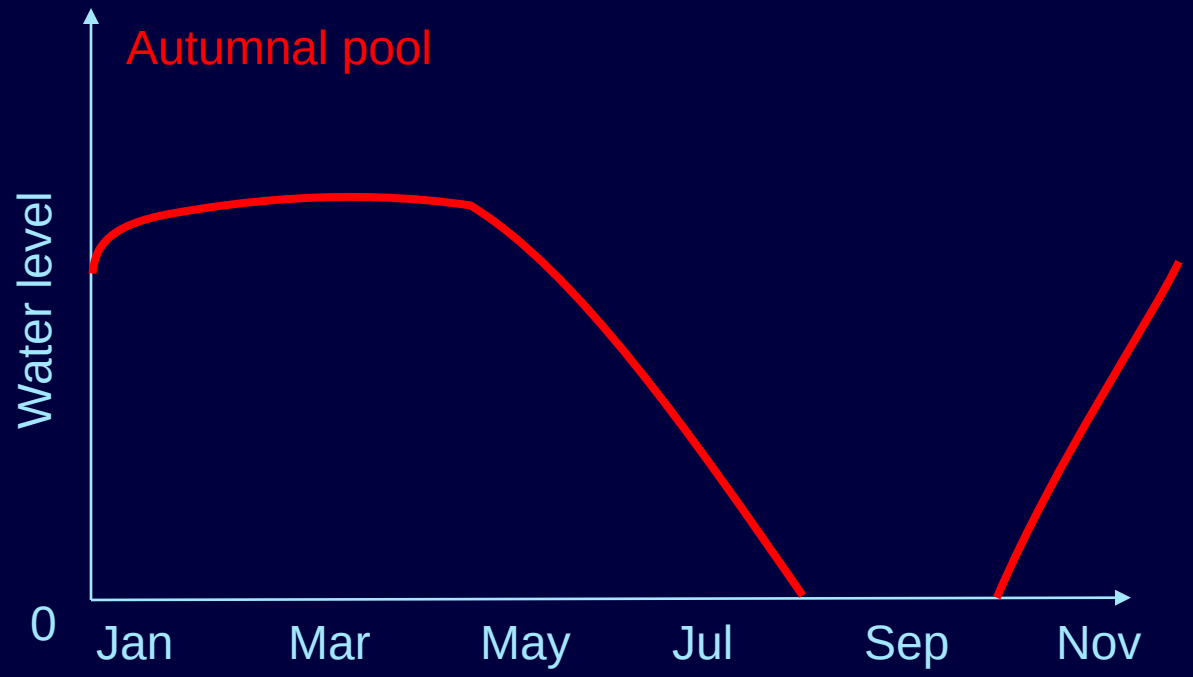
Bacillus theringiensis

Bacterial insecticide for Dipterans

More natural

encourage natural predators

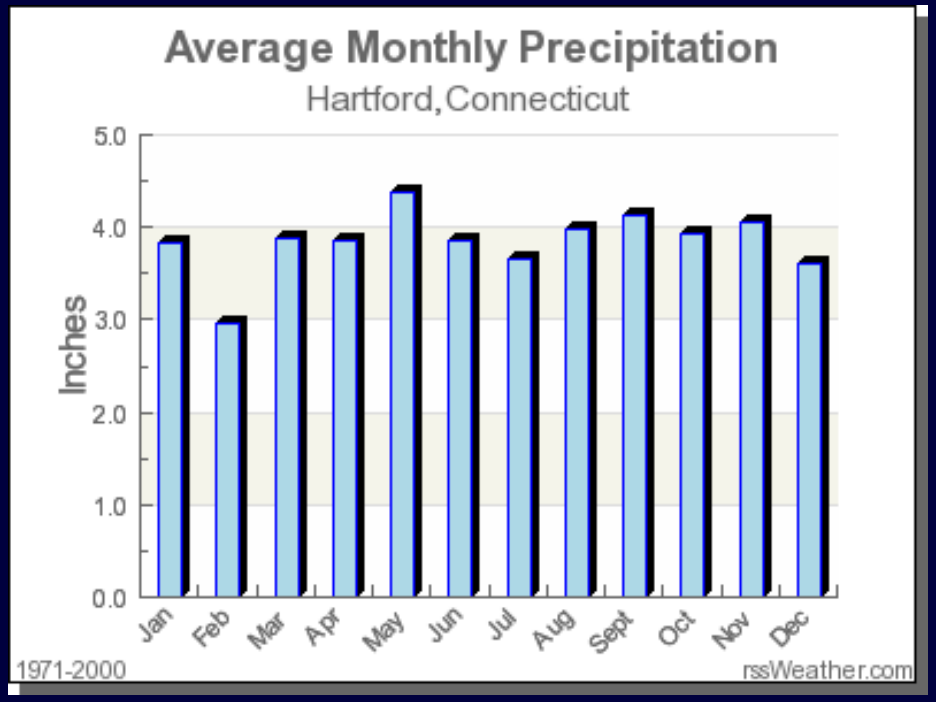

Vernal pool
Water level
0
Jan
Mar
May
Jul
Sep
Nov


Autumnal pool
Water level
0
Jan
Mar
May
Jul
Sep
Nov

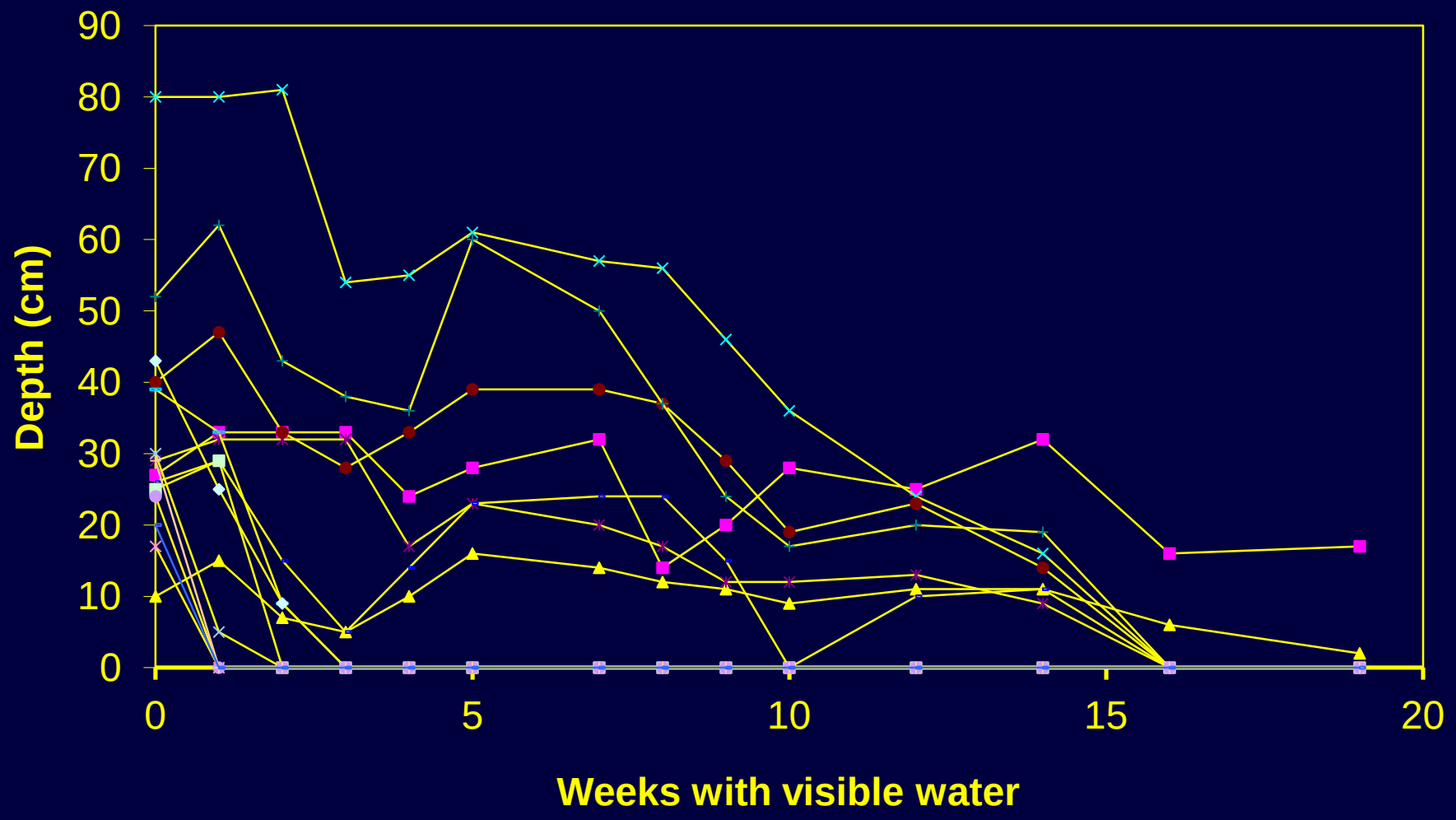
Temporary ponds

Temporary ponds

Why autumn filling if precipitation is constant ?



Drying times for study ponds



weeks

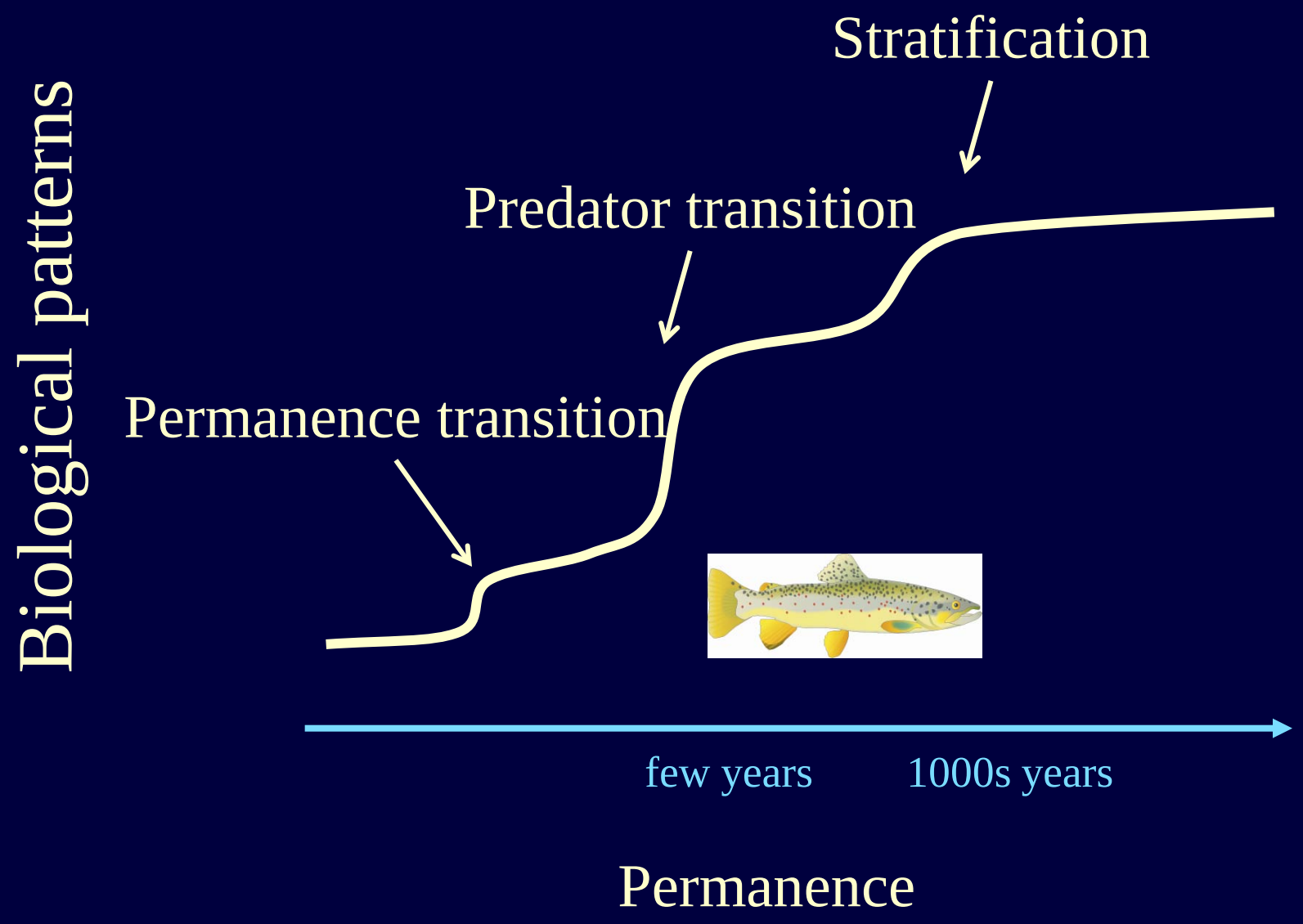
months

years

Permanence

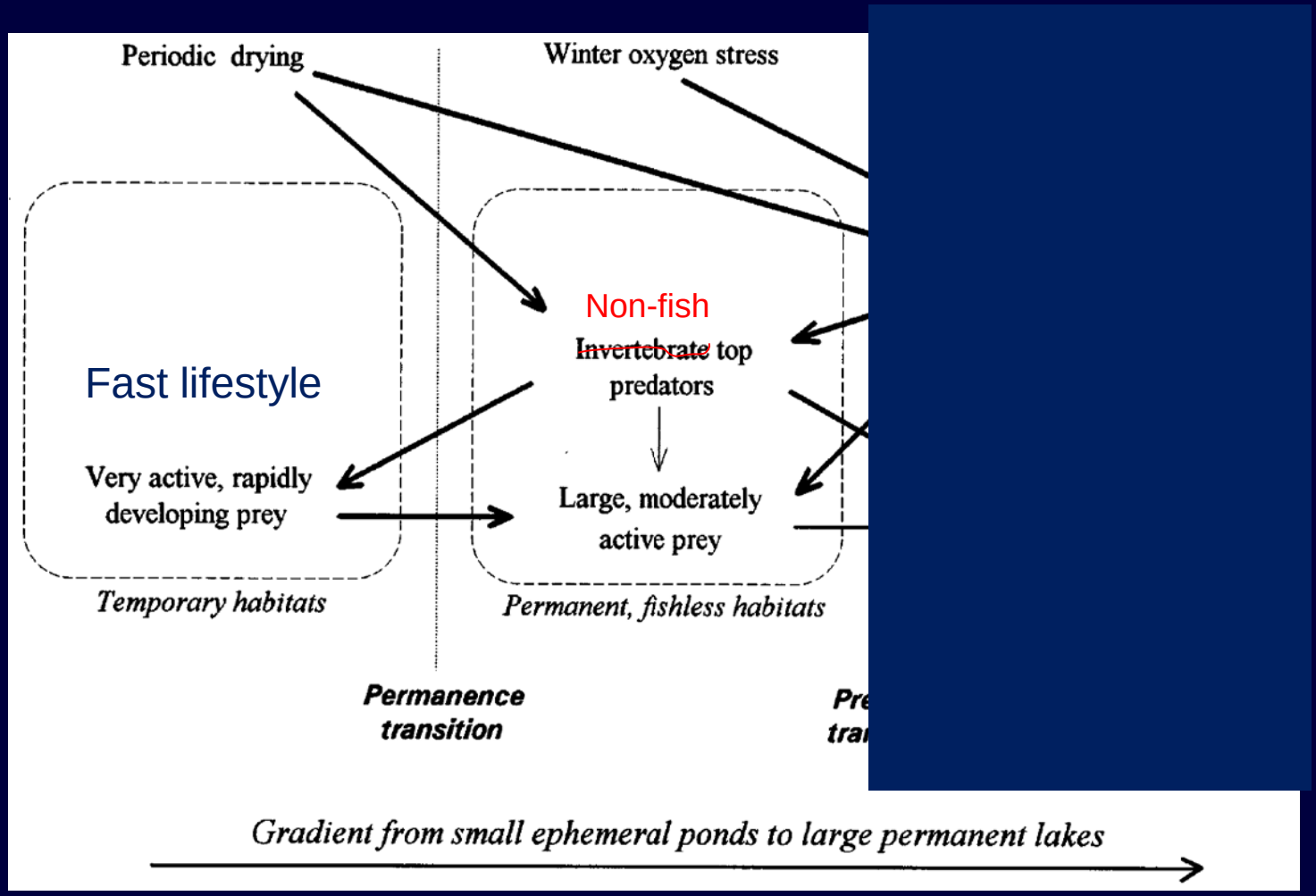
1000s of years

25,000,000 years



What causes the permanence transition ?

Permanence/predator transitions



Wellborn et al. 1996

Model of permanence/predator transitions

Permanence

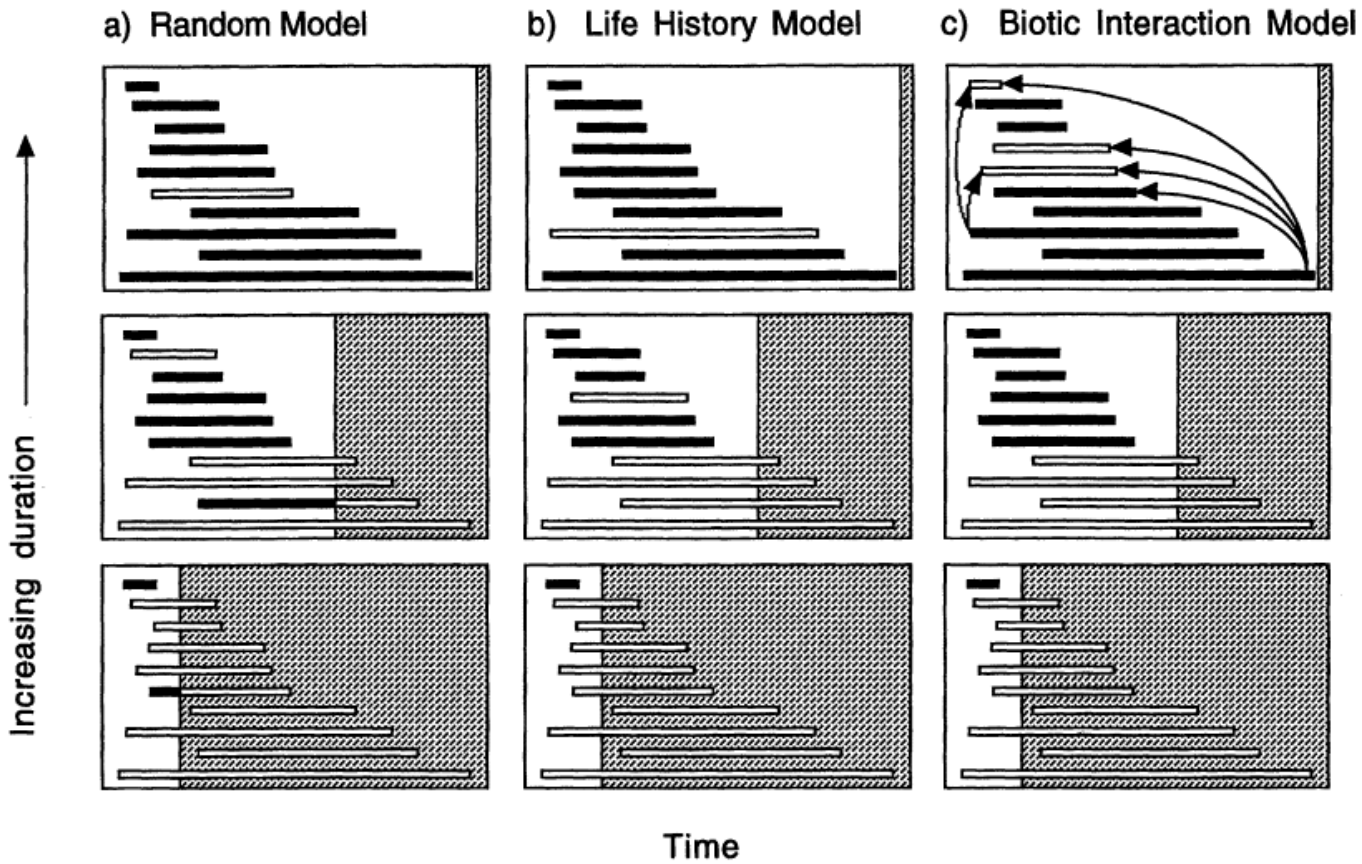
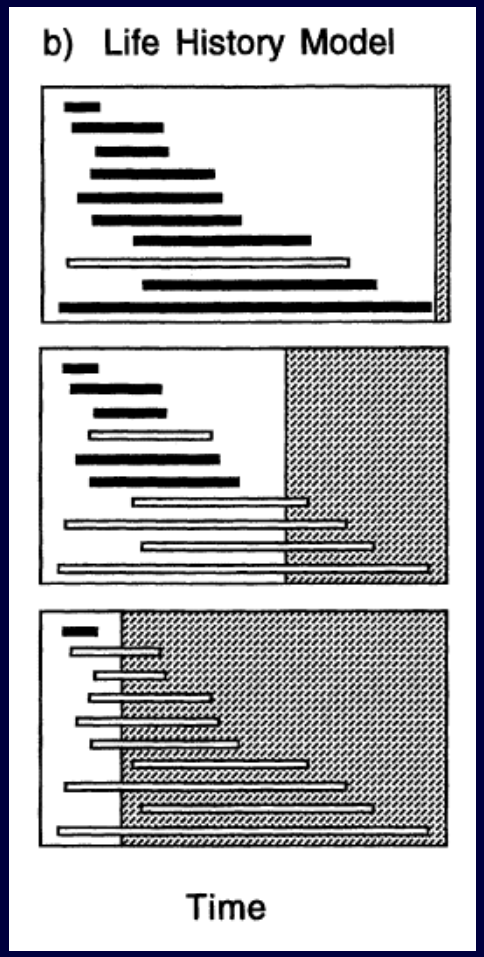
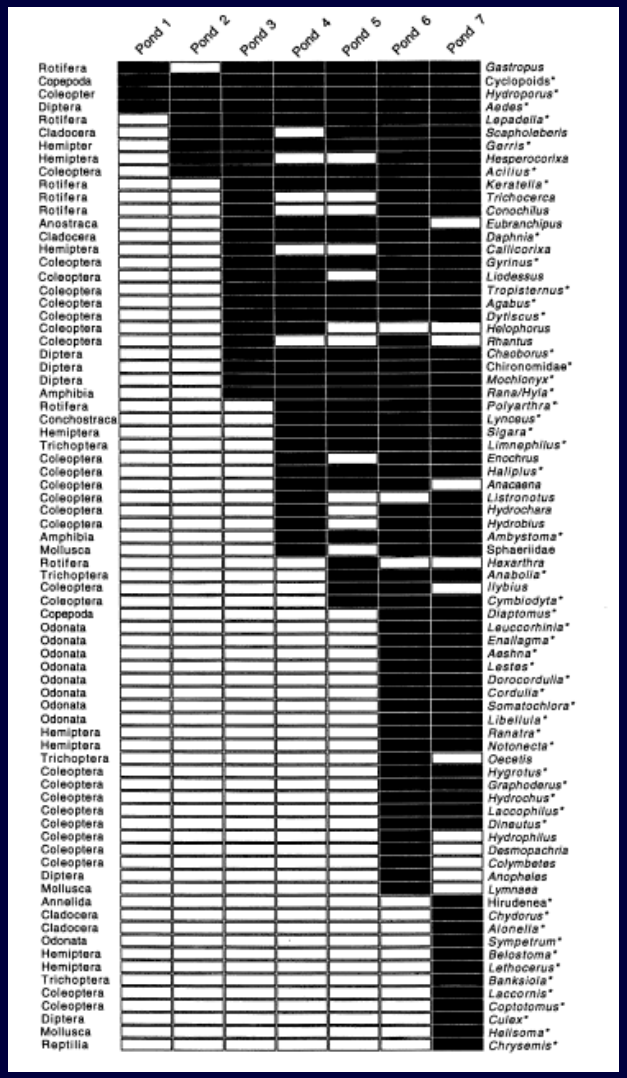


FIG. 1. Alternative models of community structure across a habitat duration gradient, for a hypothetical community of 10 taxa with differing life histories. This figure illustrates the expected patterns of distribution of these taxa in 3 ponds along a habitat duration gradient when 3 different forces operate to structure communities. The shaded area indicates the onset of drying. Each bar is a taxon, with its length representing the duration of the aquatic phase of the life cycle, from eclosion or activation to diapause, reproduction, or emergence. A solid bar indicates that a taxon is present in a pond; an open bar indicates absence. Arrows indicate biotic interactions. See text for details of the model predictions.

Schneider & Frost 1996

Permanence transition

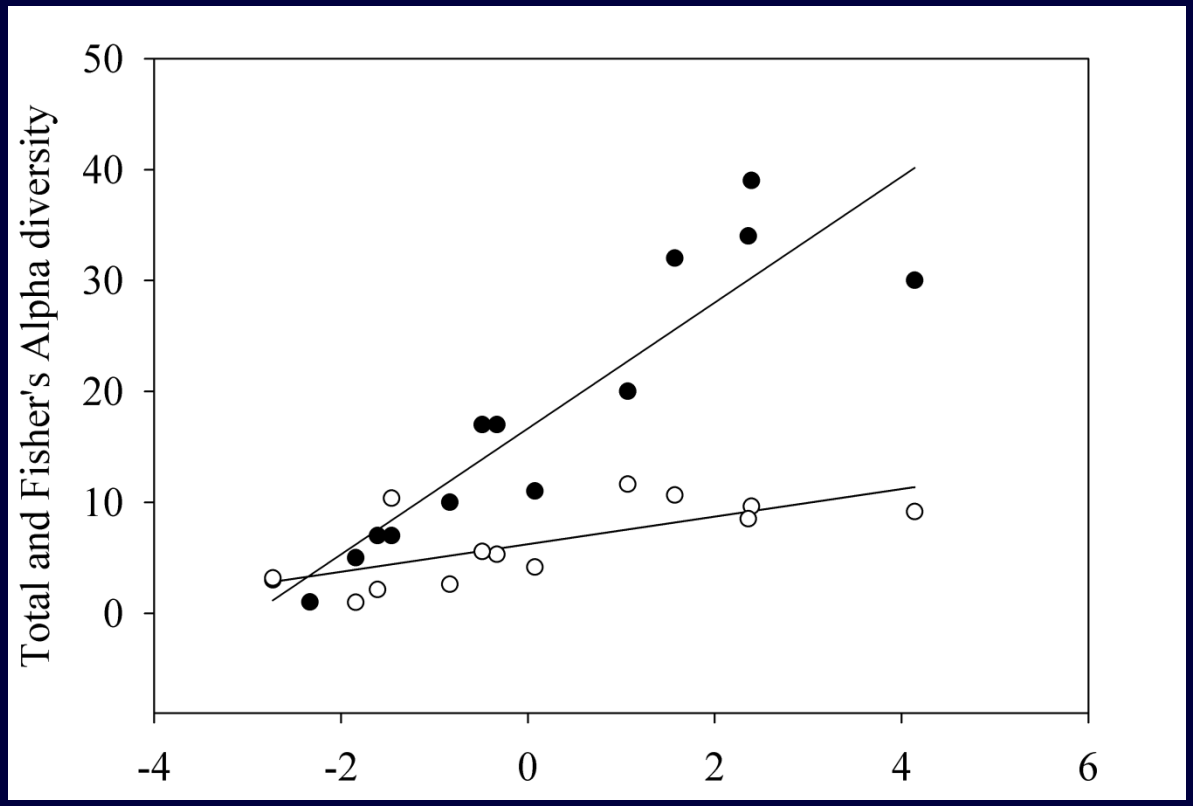




Nested subset analysis

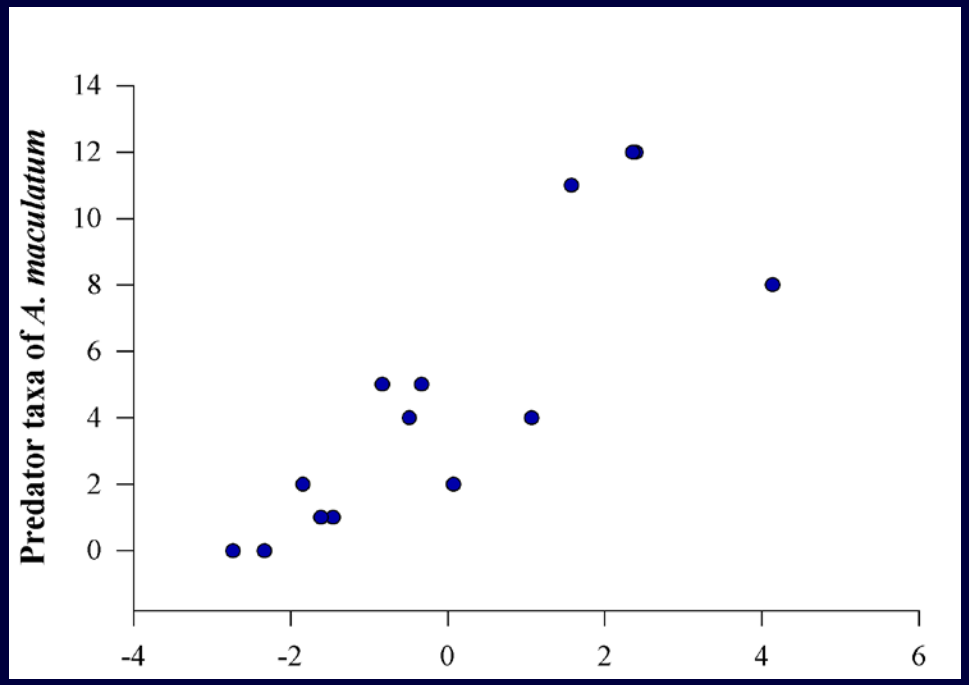
Schneider & Frost 1996

Total pond diversity increases with permanence

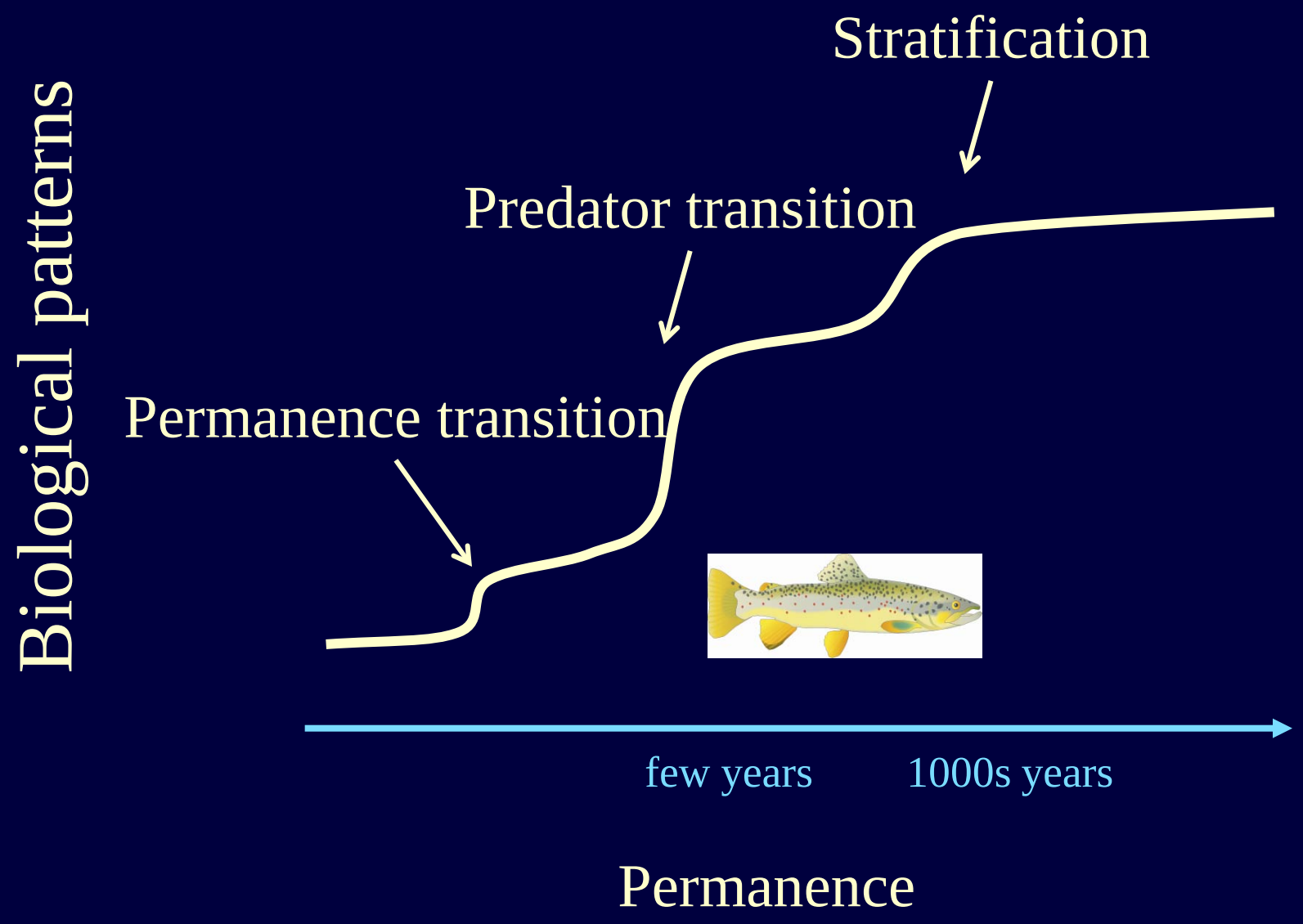


Permanence

Predator diversity increases with permanence

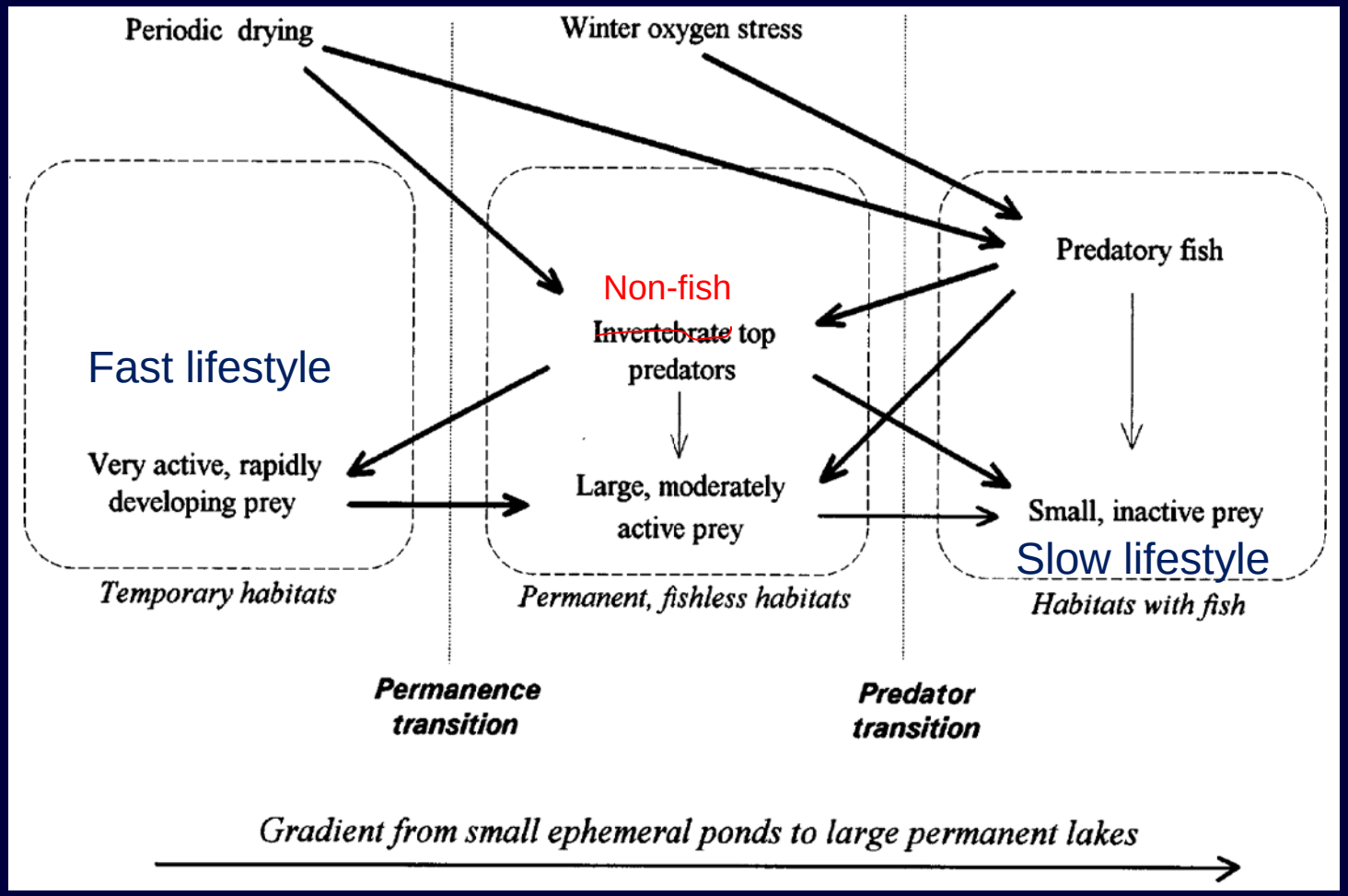


Permanence



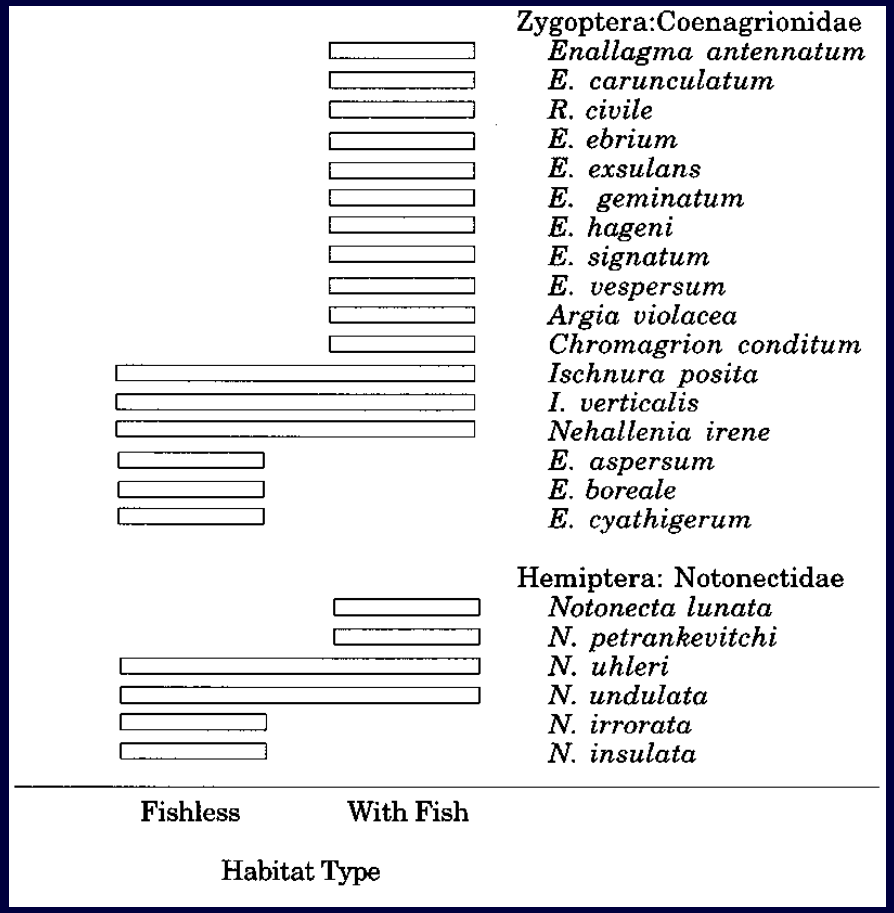
What causes the permanence transition ?

Permanence/predator transitions



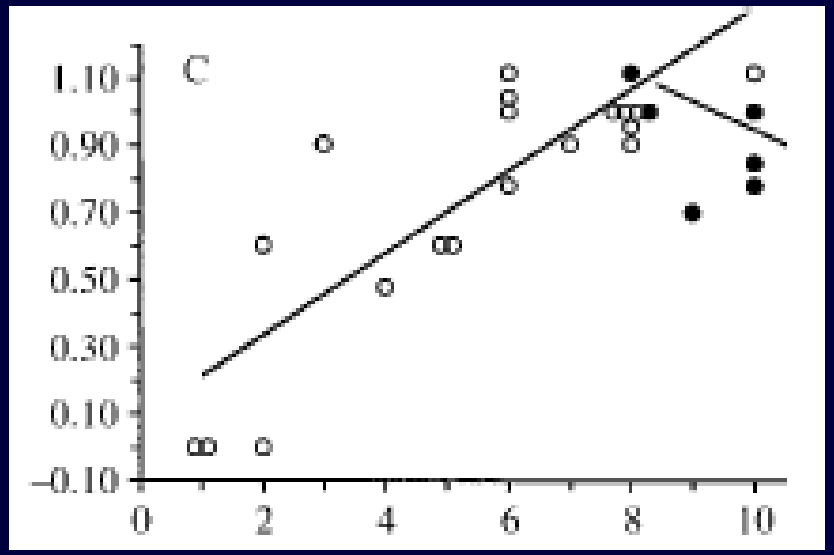
Wellborn et al. 1996

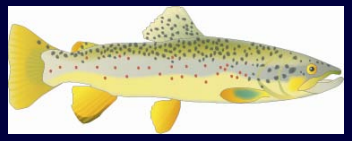
Permanence effects on biota



Wellborn et al. 1996

Amphibian diversity increases with permanence





Snodgrass et al. 2000

Permanence

Drying

Tradeoff

Predators

Permanence

Other correlated effects