

{ Artificial Fish Habitat }



{ Intended Use }

Artificial Fish Habitat *(Scientific Community)*

- Replace lost natural habitat
- Improve overall Ecosystem
- Increase Forage/Growth Rates

Artificial Fish Attractor *(General Public)*

- To attract and hold fish in a convenient spot to catch them
- x
- x

{ Public Perception }

"Dumping Garbage"



“Why use artificial materials instead of natural?”

- Fish Holding Potential¹
- Fisherman acceptance
- Easy installation
- Snag Resistant
- Variety of Shade & Texture
- Species Specific
- Cost Efficient
- Long Lifespan
- Less Effort to Install
- Greater Availability



(Brett Feger, Western Illinois University, Illinois)

“Why use artificial materials instead of natural?”

“To grow maximum *periphyton* for fish food”



“Why do we want bio film (a.k.a. periphyton) to grow?”

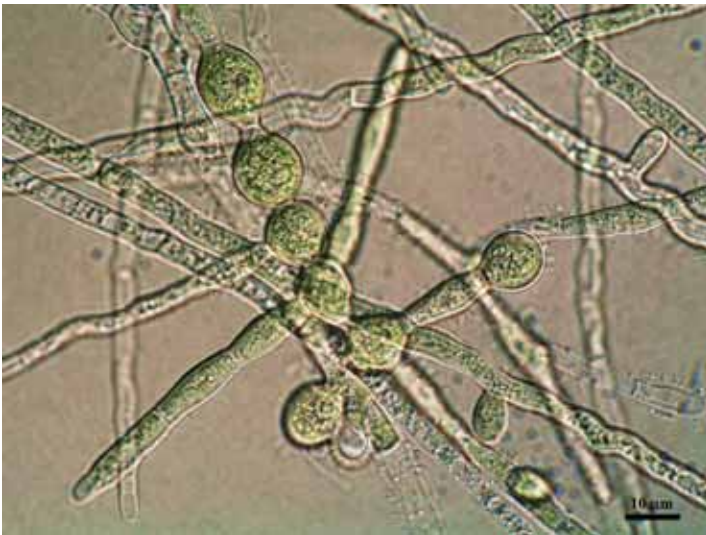


Photo by CCALA

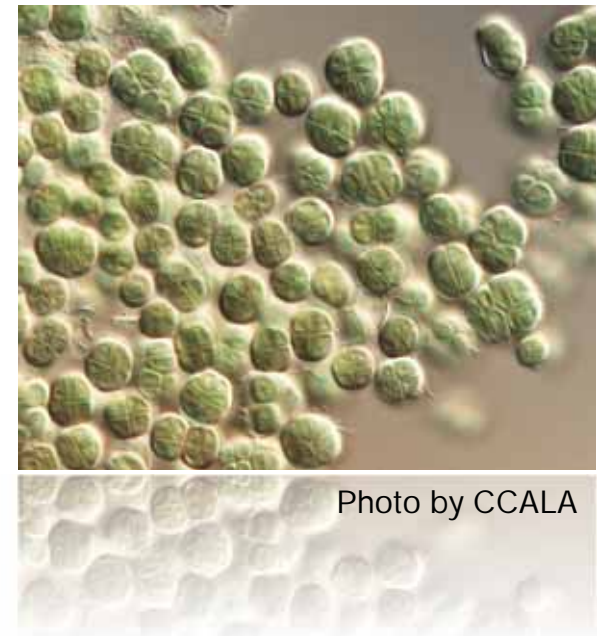


- Typically, algae are not the dominant component of periphyton in fish ponds.
- Algae, (in periphyton) has a higher food value for fish food than vascular plants.
- Dead periphyton is better fish food than dead phytoplankton.
- Periphyton is better fish food than phytoplankton.

Brief Review of Periphyton; Ecology, Exploitation, and Management
Edited by M.E. Azim, et. Al. CAB Publishing, 2005

“Why do we want bio film (a.k.a. periphyton) to grow?”

- Bio Films (A.K.A. periphyton) have a “remarkable efficiency” for up taking nutrients.
- D.O. is higher when substrates are synthetic rather than organic.(6.4mg/L and near zero for sugar cane)
- Periphyton moves nutrients up the food chain better than fish food.



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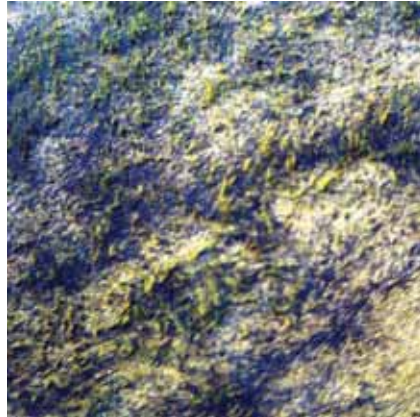
"Aren't natural products better?"

"Keshavanath et al. (2001b) reported an experiment with different types of substrates for enhancing the production of mahseer (*Tor khudree*, *Cyprinidae*). Bamboo poles, PVC pipes and sugarcane bagasse substrates were placed in 25 m² concrete tanks with mud bottoms and fingerlings of about 3 g were stocked at densities of 1, 1.5, and 2 fish per m². After 90 days, the highest net production with bamboo substrate density was 447 kg ha⁻¹ at the highest fish density, against 399 kg ha⁻¹ with the PVC pipes."



“Aren't natural products better?”

- In ponds provided with periphyton substrates, one half of the primary productivity was contributed by periphyton.
- Highest value of periphyton in “fish parks” was 4.5 times higher than nearby lagoon.



“How does bio film form?”

“Development of a periphyton layer on a clean surface generally starts with the deposition by electrostatic forces of a coating of dissolved organic substances (mainly mucopolysaccharides), to which bacteria are attracted by hydrophobic reactions (Hoagland et al., 1982; Cowling et al., 2000). The presence of freefloating organic micro-particles in eutrophic waters stimulates this process. Bacteria actively attach using mucilaginous strands. This can take a week, but in some studies this was observed within days and even within a matter of hours. (Hoagland et al., 1982).”



