DISCUSSION

There is a slight indication from the results of these heat tolerance tests that albino channel catfish are more resistant to lethal effect II. However, the differences were not statistically significant. It can be stated that the albinos were not less resistant to lethal effect II. This experiment did not determine the relative resistance of albinos to other lethal effects of high temperatures.

Even under natural conditions the lack of pigmentation is not always a disadvantage, as evidenced by the extinction of melanine pigmentations in cave fishes, particularly in *Anoptichthys* (Şadoglu, 1957). If there are no physiological weaknesses linked to the mutation in question here, it may not be a disadvantage in those situations in which predation is controlled by man.

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A NOTE ON PHOSPHORUS CHANGES IN POND SOILS

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ABSTRACT

Nitrogen content of fertilizer formulations influenced the amount of organic and inorganic phosphorus found in the bottom soil of fish ponds flooded with water of medium hardness and alkalinity.

INTRODUCTION

Phytoplankton, a natural fish food, is dependent on soluble inorganic phosphorus for growth. The use of phosphorus in pond fertilization programs attempts to supplement that amount already present. The continuing need for phosphorus applications (Swingle, et al. 1963) suggests that phosphorus is rapidly utilized or that large portions quickly become unavailable. Phosphorus becomes fixed in soil by reacting with inorganic and organic components (Kardos 1964) and is no longer readily available as a nutrient source.

A study was made to monitor inorganic and organic phosphorus levels in the bottom soils of ponds throughout the growing season and to determine the influence, if any, of varing rates of nitrogen, application and of different water sources on the forms of phosphorus.

METHODS

Eight ponds constructed on silt loam soil were used. Four were filled with well water, and 4 were filled with surface water. Well water was characterized by high alkalinity of 430 ppm ($CaCO^3$) and a total hardness of 167 ppm ($CaCO^3$). Surface water was of medium alkalinity and hardness, 80 ppm and 25 ppm respectively. Two well water and 2 surface water ponds received a total application of 900 pounds per acre of a 4-24-2 fertilizer (N-P-K). The remaining ponds, 2 with well water and 2 with surface water, were treated with the same amount (900 lb) of a 12-24-2 formulation. Fertilizer applications were made at intervals throughout the growing season from April to October. Soil samples were collected to a depth of 6 inches from each pond at monthly intervals. Duplicate analyses were performed on all samples by methods of Dormaar and Webster (1963). Equivalent amounts and species of fish were stocked in each pond.

RESULTS AND DISCUSSION

Large variations in the initial organic and inorganic phosphorus levels were found among the ponds. The range of organic phosphorus was from 9 to 40 mg/100 g. and that of inorganic phosphorus was from 29 to 127 mg/100 g. Consequently, all values were transformed and related to the initial organic phosphorus content of each pond. This level was considered to equal 100.

Inorganic phosphorus remained essentially constant throughout the growing season but there was a significant cycling and increase in the amount of organic phosphorus (Table 1).

The amount of nitrogen contained in the formulations influenced both organic and inorganic soil phosphorus when surface water was used (Table 2). As more nitrogen was applied less organic and more inorganic phosphorus was present. This relationship did not hold when the water source was a well.

These results suggest that high rates of nitrogen application lead to an overall increase in the amount of inorganic phosphorus present in bottom soils of ponds filled with water of medium hardness and alkalinity.

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TABLE 1.

Relative levels of organic and inorganic phosphorus in soils of ponds throughout one growing season (average of eight ponds).

	Month						
	April	May	June	July	August	September	October
Organic phosphorus	100a*	239b	216b	138a	212b	294c	204b
Inorganic phosphorus	236a	320a	323a	330a	319a	290a	340a

*Values on the same row followed by the same letter are not significantly different from each other at the 5 per cent level.

TABLE 2.
Influence of well and surface water and fertilizer formulation on the relative levels of organic and inorganic phosphorus in pond soils (average of two ponds throughout growing season).

	Phosphorus			
	Organic		Inorganic	
	4 - 24 - 2	12 - 24 - 2	4 - 24 - 2	12 - 24 - 2
Well water	134a*	132a	335b	307b
Surface water	335b	200a	219a	361b

*Values tabulated under phosphorus fraction followed by the same letter are not significantly different from each other at the five percent level.

PARASITIC BARNACLES IN MISSISSIPPI ESTUARIES WITH SPECIAL REFERENCE TO *LOXOTHYLACUS TEXANUS* BOSCHMA IN THE BLUE CRAB *(CALLINECTES SAPIDUS)*[1]

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INTRODUCTION

Non parasitic cirripedia of the order Thoracica are generally recognized as fouling organisms on any solid substrate wherever there is estuarine water capable of supporting them. Parasitic cirripedia are less well known. The Rizocephlan genus *Loxothylacus* is common in several Gulf Coast Crabs.

Loxothylacus texanus may be of considerable importance as a parasite in the blue crab *(Callinectes sapidus).* This speices supplies the multi-million dollar crab fishery of the Atlantic and Gulf Coasts. Catastrophic depletion on the Atlantic Coast in the last few years has centered attention on possible causes of this loss.

In the Gulf of Mexico Crab fishery commercial production (Lyles, 1967) has generally increased, although considerable annual fluctuation is evident. Economic factors have probably been the major cause of fluctuations. However, commercial fishery production does not correctly reflect fishing pressure on the blue crab population. An extensive "sports" fishery and shrimp trawls take large quantities of crabs that are not recorded. Shrimp fishermen usually discard crabs by methods which probably kill them. Fishing mortality is likely to increase.

Reinhard (1950) noted Daugherty's observation of a 16.4 per cent infestation of blue crabs by *Loxothylacas texanus* in the Rockport area in 1948-49. In 1965, I found that up to 50 percent of the crabs taken in some hauls were parasitized by *Loxothylacus.* Although this was an unusual occurrence and crabs with sacculinid parasites are usually relatively rare, the possibility of heavy infestation which could appreciably deplete the blue crab population does exist. Since the beginning of our Cooperative Estuarine inventory and study in 1966, I have observed the occurrence of *Loxothylacus* in Mississippi's estuaries. The rate of infestation has been negligable during this period, but some interesting observations have been made. This work has been done as a Federal Aid project under Public Law 88-309.

THE STUDY AREA

Mississippi Sound is located along the Northern Gulf Coast east of the Mississippi Delta between Mobile Bay and Lake Ponchartrain. A series of barrier islands with

[1]This study was conducted in cooperation with the U. S. Department of Interior Bureau of Commercial Fisheries under P. L. 88-309 (Project Number 2-25-R)