Twine Line is published by the Extension Program of Ohio Sea Grant, partially supported through a grant from the National Sea Grant Program of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. It includes information about the Great Lakes fishing industry, Lake Erie fish stocks and markets, and other news of interest to Ohio fishermen and fish processors.

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LYMPHOCYSTIS DISEASE IN LAKE ERIE WALLEYES

April and May are the peak months for the occurrence of a prominent skin disease in walleye known as lymphocystis. This disease is frequently seen by anglers who catch walleye in the Sandusky and Maumee Rivers, by commercial fishermen in the walleye they release from their nets, and to a lesser degree by boat anglers in walleye taken in May and June.

Lymphocystis usually appears as a cluster of white or cream colored warts or fleshy growths erupting from the skin or in the fins of a walleye. The cause is a virus which is released into the water when growths on an infected fish rupture. The virus can infect healthy walleye by entering skin abrasions or cuts and then attacking cells in the connective tissue. These cells grow to a millimeter or more in diameter - gigantic as far as cells go - causing lumps on the skin which feel somewhat like tapioca. Eventually the growths will rupture, releasing more virus into the water, and the lesions will become scarred over. Various authors differ on the incubation period of lymphocystis. Some report that fish infected in the spring will develop growths the following spring; others indicate that incubation may take only a few weeks. Temperature may be an important factor in determining the period.

Lymphocystis is not generally fatal to the fish, and practically all will recover from their infections. Fishermen need not worry if they see this disease on their walleye. The flesh will remain unharmed and lymphocystis cannot be transmitted to humans.

At least 65 species of freshwater and saltwater fishes are known to contract lymphocystis. In Lake Erie the walleye is the only species in which the disease is commonly seen although it has been reported in yellow perch. This writer has occasionally seen lymphocystis in spotted bass and smallmouth bass taken from the lower Muskingum River. It also occurs in other members of the sunfish family. Another similar viral skin disease called walleye dermal sarcoma is found in Lake Erie, but examination with a magnifying glass will usually separate the two diseases. Lymphocystis tumors are composed of a few grossly enlarged cells; dermal sarcomas consist of irregularly shaped but normal-sized cells.

- Fred Snyder
  Extension Agent

High Lake Levels in Store for 1980

Lake Erie's water level is relatively high again this spring and the U.S. Army Corps of Engineers predicts that levels will remain high throughout the summer.

In the Corps' Monthly Bulletin of Lake Levels for the Great Lakes, Lake Erie's average level during February, 1980 was 571.54 feet, which is 1.76 feet higher than the long-term February average level for this century. This is still lower than the record lake levels experienced in 1973, which ranged a foot higher than 1980 levels and 2.85 feet above the long-term average level for February.

The same bulletin also provides predicted water levels through August, 1980. These predictions are based on precipitation and streamflow patterns throughout the Great Lakes Basin and have historically been quite accurate. Lake Erie water levels during the summer of 1980 are expected to range from about 1.2 to 1.6 feet higher than long term average levels but nearly a foot lower than the record levels of 1973.

High lake levels may benefit some groups of lake users but plague others. Higher water levels often improve water quality and can sometimes increase the spawning success of fish species spawning in rivers and on reefs. But these higher levels may indicate a
painful year ahead for shoreline property owners as wind-driven waves batter the shoreline and storm surges cause flooding in the lake's western basin.

Contrary to a persistent rumor, Lake Erie's water level is not artificially regulated by man. Presently, only Lakes Superior and Ontario have controlled levels. The International Joint Commission (IJC) and its International Great Lakes Levels Board examined the feasibility of regulating Lake Erie's level by modifying the Niagara River but decided that the costs would outweigh the benefits. A current IJC study is considering a limited form of regulation which would increase Lake Erie's outflow only during periods of high lake levels. Limited regulation would mean discharging additional water through the Black Rock Canal or by channel excavation and a regulatory structure extending part of the way across the Niagara River from Squaw Island.

Shoreline property owners who are experiencing or anticipating erosion may be interested in a free publication compiled by the U.S. Army Corps of Engineers entitled "Help Yourself". This lengthy pamphlet describes and illustrates the various causes of shoreline erosion and reviews the construction and efficiency of several types of erosion control structures. For property owners wishing to stabilize their shorelines with vegetation, the Great Lakes Basin Commission (GLBC) has produced a guide entitled The Role of Vegetation in Shoreline Management. These booklets may be ordered from the Corps of Engineers and the GLBC respectively, or from the Ohio Sea Grant Extension Program.

- Fred Snyder
  Extension Agent

YELLOW PERCH TAGGING CONTINUED

Again this spring the Ohio Division of Wildlife is tagging yellow perch at various locations along the Ohio shoreline in Lake Erie. The objectives of this study are to determine perch movements, range, distribution, and relative contribution and susceptibility to Lake Erie's fisheries.

Anyone capturing a tagged yellow perch is requested to return the tag with the date and location of capture to the Ohio Division of Wildlife, P.O. Box 650, Sandusky, Ohio, 44870. Upon receipt of this information the Division will send you a response concerning the project and information on that particular fish.

Cooperation from fishermen is essential for the success of this project. Please keep an eye out for these tags whenever perch fishing. Thank you.

- Bill Bartholomew, Ohio Division of Wildlife

Modified Atmosphere Packaging Extends Storage Life of Fresh Fish

Fresh fish is the most common form of fish handled by the Great Lakes fishing industry. Worldwide, demand for fresh fish is high, and as a result, this product form generally brings premium prices to fish producers. However, the availability of whole and processed fresh fish to consumers located at any distance from production areas is restricted due to the limited storage stability of fresh fish. Commonly, bulk storage on ice is used to transport fish inland from fish production areas and for storage at wholesale and retail outlets or for in-store display. The use of ice for holding fish has several disadvantages: 1) shelf-life is only briefly extended; 2) freight costs are high because of the added weight of ice; 3) cross contamination and unsani-
tary conditions can result from melting ice and insufficient packaging.

A packaging method which may represent a vast improvement over the deficiencies of bulk storage using ice is modified atmosphere packaging. This packaging technique involves the use of an oxygen-impermeable bag, from which air is withdrawn and replaced with other gases or mixtures of gases, and finally heat sealed. This method is currently used for bulk packaging of poultry, pork, and beef in atmospheres high in carbon dioxide (CO₂). Extended shelf life has been the main advantage of the technique. Other important advantages are that the liquids associated with fresh products are sealed inside the container thereby making transportation feasible in standard corrugated boxes under normal refrigeration without ice. This factor greatly reduces costs, risks of product cross contamination, and sanitation worries.

Modified atmosphere packaging has been investigated for use with fish by Ohio Sea Grant researchers Dr. George Banwart and graduate student Edward Richter in cooperation with the Aberdeen Fresh-Pac Corporation. Ocean perch and sea trout fillets were shipped fresh from the Atlantic coast either individually packaged in modified atmospheres or in bulk quantities with ice. Comparisons of the two storage methods were made in the laboratory by counting the numbers of bacterial organisms growing on the fish as time passed. After one week's storage, the fish packaged in CO₂ with the modified atmosphere method were 50-100 times lower in bacteria spoilage organisms. Taste panel tests were conducted in conjunction with the microbiological tests at OSU's Department of Human Nutrition and Food Management by Dr. Bob Joseph and graduate student Patrice Pelton. These tests confirmed that modified atmosphere packaged fish were preferred significantly over those held on ice after one week's storage. In fact, these researchers found that fish could be held for two weeks in modified atmospheres and remain relatively tasty.

OSU's research and other research around the nation indicates that this packaging technique has great promise for extending storage life of fish as well as providing a valuable marketing aid. The convenient, attractive packages should be more easily distributed to distant consumers and still provide quality fresh fish.

- Mike Metcalf
Marketing Specialist

**NEW PUBLICATION FOR FISHERMEN**

Guide to Fishing Reefs in Western Lake Erie is a new publication from Ohio Sea Grant Advisory Services designed to give fishermen an in-depth look at the fishing reefs in the Western Basin. The guide provides detailed maps and discussions of the contours, depths, currents, distribution of sediments, and usage by game fishes of western Lake Erie's reefs.

Anyone interested in obtaining a copy of this guide can get one by simply sending 50¢ to: Ohio Sea Grant Extension Program, 305 East Shoreline Drive, P.O. Box 1599, Sandusky, Ohio 44870. Checks should be made payable to The Ohio State University. Copies may also be picked up in person for 25¢ each at the Sandusky Extension Office or at the main Ohio Sea Grant Program office in Columbus.