A site map can be viewed by clicking on the report site name.

# EcoSummary

## South Twin Lake near Umatilla

**July 6, 1998**

*VERY GOOD*

*LAKE BIOASSESSMENTS*

Lake Condition Index (LCI): A developmental biological assessment tool used by FDEP biologist to indicate ecosystem health and identify impairment in Florida lakes

**For samples collected before June 8, 2004**
All field and laboratory methods followed FDEP Standard Operating Procedures and met FDEP quality assurance/quality control standards.
**For samples collected on or after June 8, 2004**
All field and laboratory methods followed FDEP Standard Operating Procedures (SOPs) and met DEP quality assurance/quality control standards.

## Purpose



An outbreak of Mediterranean fruitflies (*Ceratitis capitata)*, a.k.a. medflies, in the Umatilla area of Lake County in 1998 prompted aerial and ground application of malathion to combat the exotic pests. FDEP Central District's Surface Water Monitoring team responded to this extensive pesticide spraying by monitoring five area lakes before, during, and after the spraying took place. The overall results of the study were reported earlier (FDEP 1998). The objectives of this investigation were to evaluate the ecological health of South Twin Lake after the spraying program ended, and to provide data useable in FDEP's continuing lakes biological assessment criteria (biocriteria) development.

Reference:

FDEP. 1998. Biological assessment of five lakes in the Umatilla, Florida area in response to application of malathion for the control of the Mediterranean fruitfly (*Ceratitis capitata*). Surface Water Monitoring Program, Florida Department of Environmental Protection, Central District, 11 pp. Report available online at:

http://www.dep.state.fl.us/water/Slerp/bio/biorepts/otherepts/umatmedf.pdf

## Watershed Characteristics

South Twin Lake is one of some 25 or more named and many other unnamed lakes that cluster around the town of Umatilla. This area is situated to the northeast of Lake Yale in the "elbow" of Lake County. These water bodies lie in close proximity to one another. The edge of South Twin Lake, for example, is approximately 100 m from that of its sibling North Twin Lake to the north and Lake Cooley to the southwest.

The area has for many years been citrus country, with both the growing and the processing of citrus important industries. South Twin Lake is partially surrounded by citrus groves, as well as by low and medium density housing, a small amount of field crops, and natural areas of scrub and mixed coniferous forest.

## Results

Biologists from FDEP Central District's Surface Water Monitoring section carried out biological and water chemistry sampling at South Twin Lake on July 6, 1998. In addition, *in situ* physicochemical measurements were made using a multimeter, and an assessment of lake habitat was performed.

The results of the benthic biological sampling, which consisted of 12 petite ponars grabs at evenly spaced locations throughout the lake, indicated that the lake is in very good ecological health. A total of 23 different macroinvertebrate taxa were collected. The most abundant of these was a larval midge of the *Polypedilum halterale* group, closely followed by the caddisfly larva *Cernotina* sp. The water mite fauna was fairly diverse, with four different species from four different genera collected. Overall species diversity was moderately high, with a score of 3.24 on the Shannon-Weaver diversity index. South Twin Lake's macroinvertebrate community health was rated as very good, based on the benthic portion of FDEP's Lake Condition Index (LCI), which is currently under development.

Water chemistry and physicochemical measurements were very good. All nutrient levels were quite low, with the exception of total ammonia, which was present at a moderate level. Turbidity and color were very low, and the Secchi depth (a measure of water clarity) was greater than the 6 m depth of the lake. The dissolved oxygen concentration was very good, at 7.1 mg/L.

The habitat assessment score was 83 out of possible 100 points, due to shoreline development and upland land use (primarily citrus).

## Significance

These results suggest that there was no substantial effect on the health of the macroinvertebrate community of South Twin Lake from the malathion spraying that preceded this sampling. Although the results of the larger study did suggest that subtle differences in the community makeup might have taken place during the spraying program (see the report referenced above), the overall heath of the lake does not appear to have suffered at all. Current land use patterns seem to be such that ecosystem health at South Twin Lake has remained good.

## Suggestions

Further residential development in the watershed should be discouraged. The remaining lakeside native vegetation should be conserved. Careful spraying protocols and judicious timely monitoring of malathion levels in air, water, and sediments should be carried out during any future medfly outbreaks.

---

For more information, please contact
Dana R. Denson
Central District Office
3319 Maguire Blvd., Suite 232, Orlando, FL 32803
(407) 894-7555 x 2355 (Suncom 325-2355)
E-mail: dana.denson@dep.state.fl.us

Published by the Florida Department of Environmental Protection
Tallahassee, Florida
For more information on the DEP Bioassessment programs, please visit
our web site at http://www.dep.state.fl.us/water/bioassess

# South Twin Lake near Umatilla

