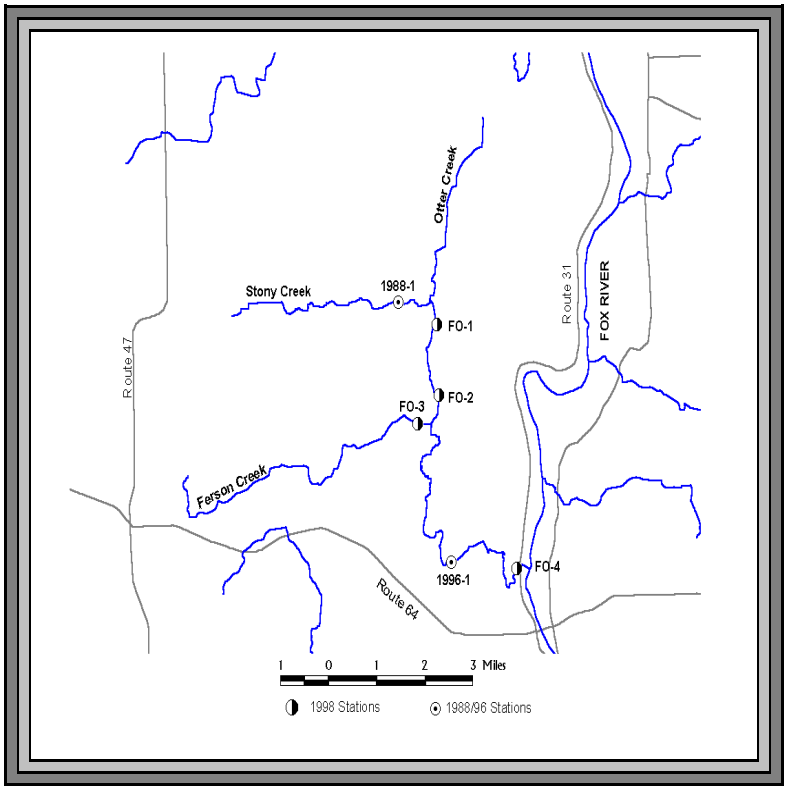
FERSON/OTTER CREEK BIOLOGICAL SURVEY

Division of Fisheries, September 1998

Ferson Creek is a tributary entering the Fox River near St. Charles, IL. The watershed covers 54 square miles and is located entirely within Kane County. Ferson Creek Park, Ferson Creek Fen, Leroy C. Oakes FP and Otter Creek Bend Wetland are located along Ferson and Otter Creeks.

During 1998, a biological survey of Ferson Creek was conducted to determine the current status of the stream ecosystem. The condition of biological communities can provide clues to existing problems within the stream and the watershed as a whole. In addition to providing useful information for restoration efforts in the watershed, this data will serve as a baseline for evaluating the effectiveness of management practices and will complement stream morphology studies currently underway (St. Charles Park Dist./Chicago Wilderness).



Four locations were selected (see map) on the major branches of Ferson and Otter Creek, representing a range of existing stream habitats. All sites were sampled for fish, macroinverbrates and habitat quality. At each station, stream conditions were evaluated using the Index of Biotic Integrity (IBI), the Macroinvertebrate Biotic Index (MBI), and the Stream Habitat Assessment Procedure (SHAP). The IBI is a widely-used stream quality measurement based on the fish community which takes into account the number and types of species present, their tolerance to degradation, food and habitat preferences and condition. IBI scores range from 12-60, and are the basis for determining a stream segment's Biological Stream Characterization (BSC), a letter rating ranging from A-E. Scores of 51-60 yield the highest rating of 'A', 41-50 yields a 'B' rating, 31-40 IB. points results in a 'C' rating, etc. The MBI is a rating based on the macroinvertebrate sample (bugs and other small critters) used primarily for water quality evaluation. This Index ranges from 0 to 11 with lower scores indicating better quality. SHAP is used to evaluate stream habitat conditions yielding scores ranging from 208 (best) to 16 (worst). Discussion of previous sampling from 1988 and 1996 are also included in this summary.

For all stations combined, 716 fish representing 31 species were collected. Composition of the fish community varied at individual stations primarily in response to differences in habitat and proximity to the Fox River. A summary of conditions at each individual station is given below:

Station FO-1

Station FO-1 was located just downstream of McDonald Road on Otter Creek. The fish population was dominated by green sunfish, white sucker and bluntnose minnow, all very tolerant species which generally indicate degraded conditions. The habitat at BC-1 rated very poor, with a low SHAP score (53). The MBI (5.0) indicated good water quality conditions. The stream at this location was affected by channelization. The channel was deeply incised, lacking riffle/pool development. Sedimentation was severe due to bank and bed instability. These conditions resulted in a fish community composed of slow water, tolerant species with wide preference of food types (omnivores) yielding an IBI score of 40 out of a possible 60 points.

Station FO-2

Station FO-2 was located in the Otter Creek Bend Park, downstream of Silver Glen Road. This station had good water quality (MBI=5.2), and habitat in the 'good' range (SHAP=130).

	FO-1	FO-2	FO-3	FO-4
# species	14	14	17	25
# intol spp	1	2	5	10
IBI	40	36	50	50
BSC	C	C	B	B
MBI	5.0	5.2	5.2	5.3
SHAP	53	130	108	166

However, FO-2 still rated relatively low, with an IBI of 36. The productivity at this station was poor with only 62 fish collected from 14 species. Unlike the stream segment at FO-1, this area of the Otter Creek at FO-2, has not been recently channelized or 'maintained' and retains some good habitat characteristics. However, as indicated by the IBI, this section may suffer from activities elsewhere in the watershed. Upstream channelization and field tiling, together with recent urban development may increase downstream flow rates. The increase in flows has a flushing effect downstream, displacing fish and their food organisms. Channel bed and bank instability could also discourage establishment of

Central stoneroller *Campostoma anomalum*

biotic communities. Despite the poor IBI, FO-2 shows potential for recovery as indicated by the presence of some good habitat features and several intolerant species.

Station FO-3

Station FO-3, was located on Ferson Creek about 1/4 mile upstream from the confluence with Otter Creek. This location rated in the 'good' range for both habitat (SHAP=108) and water quality (MBI=5.2) and contained a very diverse fish community for a small stream. A total of 17 species was found, including 5 considered intolerant to degradation. Ferson Creek is a relatively high gradient stream (0.32 % slope; 17 feet/mile), which favors darters and other riffle species (stonecat, northern hogsucker) and reduces vulnerability to sedimentation. The lack of significant channelization and presence of upstream reservoirs may moderate flashy flows reducing the flushing effects at this station. Proximity to the mainstem of Otter/Ferson Creek, which serves as recolonization source, may also be an important factor.

Station FO-4

Located just 1/4 mile upstream of Fox River, FO-4 had the highest diversity with 25 species, including 6 species of darters. This station had all the components critical to a quality stream segment. Habitat rated in the excellent range (SHAP=166) with very good pool development, offering a wide variety of depths and flows. The lack of channel alteration and the intact corridor and flood plain helps to protect and "feed" this section of the stream with plant debris and woody material. The lower section of the creek is also larger, with more stable conditions, and is able to support a more diverse assemblage of fish. Equally important, is the close proximity to the Fox River which is a rich 'source' population including sport species like smallmouth bass and walleye.

In summary, the condition of biological communities of Ferson /Otter Creek depends on a variety of factors both within the stream and in the watershed as a whole. Based on MBI values, water quality does not appear to be a limiting factor in the stream system. Habitat quality and connection to the Fox River are more important considerations. Instream habitat quality is a function of land use and channel manipulation. Station FO-1 appears to be typical of much of the upper, channelized sections of Otter Creek. The immediate effects of channel straightening are clear with degraded habitat, sedimentation and dominance by tolerant species. Downstream effects of channelization are also apparent, as suggested by conditions at FO-2. Otter Creek, above the confluence with Ferson Creek, appears to have an overall BSC rating of 'C'. In contrast, the natural meandering character of Ferson Creek supports good habitat and a diverse fish population. Results from 1998, combined with a 1996 survey at LeRoy Oakes FP (IBI=48) suggests an overall rating in the upper 'B' range, for Ferson Creek downstream of Compton Lake. A 1988 survey on Stony Creek resulted in an IBI score of 46, indicating that this tributary maintains good habitat features. No smallmouth bass were found upstream of Leroy Oakes FP. A small dam, located just above the Forest Preserve, blocks migration of smallmouth bass and other species from the Fox River. Removal or modification of this and other dams is necessary to reconnect the watershed for full system recovery. Improvement of habitat in upper Otter Creek and moderation of flows is also a critical component.

COMMON NAME	Otter Ck FO-1	Otter Ck FO-2	Ferson Ck FO-3	Ferson Ck FO-4	total
Carp	Five	0	1	0	6
Creek chub	5	6	37	0	48
Hornyhead chub	0	3	21	3	27
Central stoneroller	25	7	40	18	70
Striped shiner	2	1	1	0	4
Common shiner	1	4	1	0	6
Spotfin shiner	0	0	0	3	3
Fathead minnow	2	1	0	0	3
Bluntnose minnow	11	10	18	40	79
Emerald shiner	0	0	0	1	1
Rosyface shiner	0	0	0	2	2
Sand shiner	0	12	0	3	15
White sucker	89	10	29	15	143
Northern hog sucker	0	1	1	16	18
Golden redhorse	1	0	0	1	2
Channel catfish	0	0	0	1	1
Stonecat	0	1	6	19	26
Tadpole madtom	0	0	0	2	2
Mottled sculpin	0	0	0	19	19
Largemouth bass	4	0	9	7	20
Smallmouth bass	0	0	0	4	4
Green sunfish	27	3	45	4	79
Bluegill	12	1	33	23	69
Walleye	0	0	0	1	1
Blackside darter	0	0	0	2	2
Slenderhead darter	0	0	0	9	9
Logperch	0	0	0	8	8
Johnny darter	3	2	3	9	17
Banded darter	0	0	5	14	19
Rainbow darter	0	0	1	0	1
Fantail darter	1	0	5	6	12
	168	62	256	230	716

For more information contact Steve Pescitelli or Bob Rung at 630/553-0164