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Microplastic prevalence in two fish species in two U.S. reservoirs

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Metadata template for datasets of *LO-Letters* articles

Metadata provides sufficient structured information for other scientists to understand and use your data. To prepare your metadata, you will need the following information:

- Title of the dataset and an abstract that describes the study and associated data in text form
- Keywords
- People and organizations associated with the data
- Usage Rights
- Research Project information
- Coverage details (including spatial coverage of the sample sites and temporal coverage)
- Methods and Sampling
- Detailed description of the variables and units for each column of the dataset

Instructions:

1. Fill in the 2 tables below for your dataset that you will be making available. If you have more than one dataset, then fill both tables for each dataset separately, although, most of the information will be the same for Table 1.
2. Save this word file in either Word or PDF format and upload your metadata to the *LO-Letters* website when you submit your manuscript.
3. Timing of depositing your data in a repository: You should plan on submitting your data to a repository at the time of submission, however, you do not need to provide the link to the data until the paper is provisionally-accepted. During the review process, we will review your metadata. If your paper has been accepted, then we require the data to be posted in a data repository for our review. In some circumstances, reviewers may ask for the data during the review stage, at which point you need to make it available.

Table 1. Description of the fields needed to describe the creation of your dataset.

Title of dataset	Microplastic concentrations in gizzard shad (*Dorosoma cepedianum*) and largemouth bass (*Micropterus salmoides*) from two drinking water reservoirs in the midwestern United States
URL of dataset	This is forthcoming upon paper acceptance
Abstract	In this study, we explored microplastic concentrations in freshwater fish and whether these concentrations were influenced by landscape or food web characteristics. We sampled gizzard shad and largemouth bass from two drinking water reservoirs, Lake Evergreen and Lake Bloomington, McLean County Illinois that have differing shoreline land use patterns. There were no differences in microplastic number per fish between the two reservoirs. Microplastic number per fish was negatively related to gizzard shad size in line with their shift from planktivores to detritivores. There was no relationship of microplastic number and size of largemouth bass. We also found a significantly higher number of microplastics in the gills of gizzard shad compared to the gut and higher number of microplastics in the gut than gills of largemouth bass. There was no relationship with shoreline development between the two reservoirs. These data show the prevalence of microplastics in reservoirs with 100% of the fishes having microplastics irrespective of local land development patterns.
Keywords	Microplastics, freshwater fish, Largemouth bass, Gizzard shad
Dataset lead author	William Perry

Position of data author	Professor of Aquatic Ecology
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Organization associated with the data	
Usage Rights	Publicly available and free to use
Geographic region	McLean County, Illinois – Lake Evergreen (Lat. 40.648480,Lon. -89.045104) and Lake Bloomington (Lat. 40.653590, Lon. -88.930514)
Geographic coverage	Coverage of the data set is bounded by both lake shorelines
Temporal coverage - Begin date	July 20, 2018
Temporal coverage - End date	August 15, 2018
General study design	We compared Lake Evergreen which has no housing development along the shore and is all parkland to Lake Bloomington which is surrounded by a range of housing density. This project collected gizzard shad (*Dorosoma cepedianum*) and largemouth bass (*Micropterus salmoides*) from two drinking water reservoirs. In each lake six random locations were chosen where at each small (<15cm) (N=3) and large (>15cm) gizzard shad (N=3) were collected and large predatory largemouth bass were collected (N=2).
Methods description	Fish were collected from Lake Bloomington and Evergreen Lake late July through early August within a one-month time span during the summer of 2018. Fish were collected using electrofishing from boat from six different randomly selected locations in each lake (Figure MAP). We collected three juvenile (< one year old) and three adult gizzard shad (> one year old) along with two largemouth bass (> 30 cm length) were collected from each locations. Fish were individually labeled and wrapped in aluminum foil and immediately put in a cooler. The fish were then taken back to the lab to be frozen until further processing.
Laboratory, field, or other analytical methods	In the laboratory, each fish was thawed at room temperature before further examination. All fish were then measured, recording both body length (cm) and body weight (g). All further steps were performed under the fume hood to prevent airborne MP contamination, and all glassware and laboratory tools were rinsed three times with distilled water before being used. The fish were then dissected, removing the whole gastrointestinal tract (GIT), and gills (GL). Each sample was placed in a glass test tube or 150 mL beaker depending on the size of the sample itself, covered with aluminum foil, and placed back into the freezer until digestions could take place. Digestion of fish tissue followed standard procedures. Per each gram of fish tissue, we added ten mL of 1 M NaOH and 5mL of sodium dodecyl sulphate (0.5% w/v (ca 5g/L),in a 150 mL beaker. The covered beaker was then placed in a water bath for a minimum of 24 hours at 50°C, and contents in the beakers were

	gently shaken multiple times to. After the 24-hour incubation the contents where then filtered through 0.8 µm cellulose membrane filters **(Budimir et al. 2017).** Filters were then placed back into their original beaker for a wet peroxide oxidation (WPO) using standard procedures (NOAA) to further break down any remaining organic material. The filter was removed after the hydrogen peroxide digestion before the samples were put into the separatory funnel. The top of the solution from the density separation was filtered through 0.8µm cellulose membrane filters, and placed into covered petri dishes to be analyzed underneath a microscope and then stored **(Masura et al. 2015).** All extracted particles were observed and counted under a light microscope and categorized by two main MP types, fibers and fragments.
Quality control	*We conducted control sample processing using the above methods with no fish to ensure that no microplastics were introduced through the sample processing protocol. All controls were negative.*
Additional information	*Any additional information that may help future users of the data not included in the above rows, or in the table below.*

Table 2. Description of the variables (i.e., columns) in the dataset in sufficient detail for another user to understand and use the data. If there are 10 variables (i.e., columns) in the dataset, then there should be 10 rows in this column that describe each column.

Column name	**Definition**	**Units**
lake	*Either Lake Bloomington or Evergreen where the fish were collected*	*none*
species	The fish species collected – either gizzard_shad or largemouth_bass	none
site	site in each lake were fishes were collected	none
fish_n	identifier for the fish index collected at the site	none
length_cm	fork length of the fish	centimeters
weight_g	mass of the fish	grams
git_frag_number	number of microplastic fragments in the gut	number
git_fib_number	number of microplastic fibers in the gut	number
gl_frag_number	number of microplastic fragments in the gills	number
gl_fib_number	number of microplastic fibers in the gills	number
latitude	the latitude for the collection site	decimal degrees
longitude	the longitude for the collection site	decimal degrees