Inland
Management
System

Standard Operating Procedures

A manual of standard field methods
for fishery assessment and monitoring

April 1, 2004

Ohio Department of Natural Resources

Division of Wildlife

Inland Management System
Manual 2004.1: Standard Operating Procedures
For Fishery Assessment and Monitoring

IMS Sampling Methods Committee (April 1, 2004)

Ken Cunningham, Committee Chair
Inland Fisheries Research Unit

Scott Hale
Inland Fisheries Research Unit

Steve Graham and Marty Lundquist
Fisheries Management, Wildlife District 1

Larry Goedde and Mike Wilkerson
Fisheries Management, Wildlife 2

Phil Hillman and Matt Wolfe
Fisheries Management, Wildlife 3

Tim Parrett
Fisheries Management, Wildlife 4

Debra Walters
Fisheries Management, Wildlife 5

Ohio Department of Natural Resources, Division of Wildlife

1840 Belcher Drive, Columbus, OH 43224

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I. INTRODUCTION

Overview

Reductions in staff, constrained fiscal resources, and expanded responsibilities necessitate streamlining many Division of Wildlife (DOW) activities without compromising our history of excellent service and mission. Fisheries data collected during the past 20 years have provided a foundation for expanding angling opportunities, evaluating management practices, and responding to public concerns. These data are now coupled with improved computer technology to increase efficiency of data collection, storage, and distribution, which will allow more rapid responses to demand for information through the Inland Management System (IMS). This manual provides the first comprehensive sampling program for the primary sportfishes in Ohio reservoirs. The IMS sampling program is the starting point of a journey of continual improvement. Field procedures described herein can be expected to evolve through time to serve our goal and objectives.

Goal

The goal of the Inland Management System is to collect, store, use, and distribute uniform and statistically rigorous fisheries information for effective management of Ohio's inland fisheries. Development of this information base will provide insights into reservoir classification, reservoir ecosystems, and reservoir use patterns. These insights lead to efficient allocation of funding and personnel.

Annual Objectives

- Conduct standardized surveys of primary reservoir sportfish.
- Populate the Ohio Fisheries Information System (OFIS) with survey data.
- Summarize survey results for agency and public distribution.
- Revise IMS procedures and protocols as needed.

Long-term Objectives

- Classify Ohio reservoirs by biotic and abiotic characteristics.
- Monitor aquatic communities and habitats.
- Optimize fish stocking practices.
- Identify management issues and opportunities.

II. STATEWIDE SAMPLING STRATEGY

Ohio's reservoirs are the most frequently fished inland waters in the state. As a result, they are also the most extensively stocked, regulated, and monitored. The IMS sampling strategy primarily targets reservoir fishes and habitats because current information is essential to effectively manage them. Ohio has 186 public reservoirs of 2 hectares (5 acres) or larger (see Appendix A). Among these are 125 tributary reservoirs, 57 upground reservoirs, and 4 canal lakes. Small impoundments, less than 82 hectares (203 acres), are either tributary or upground reservoirs.   Distribution of these reservoirs varies among Wildlife Districts. Fish assemblages may differ substantially as a result of variation in habitat and management.

Tributary Reservoirs. The majority of Ohio reservoirs are tributary reservoirs, created by construction of on-stream dams. Tributary reservoirs vary in size and productivity, although the majority are shallow and fertile.

Upground Reservoirs. The second most common type is upground reservoirs, located primarily in northwestern Ohio. The name upground is derived from their above-ground construction. Upground reservoirs vary in size, but they are typically infertile, receive and discharge water via pumping facilities, and have littoral zones comprised almost entirely of riprap.

Canal Lakes. Canal lakes are the least common of Ohio's reservoirs. We identify only four: Buckeye Lake, Indian Lake, Lake Loramie, and Grand Lake St. Mary's. They are among Ohio's earliest impounded waters and were developed to provide water sources for the Erie Canal system. Canal lakes are generally shallow, fertile, and large (340-5,138 hectares [851-12,844 acres]).

An important component of our sampling strategy is to provide information about the major sportfishes in all reservoirs; therefore, we will sample black bass, sunfish, crappie, percid species (i.e. walleye and saugeye), and hybrid-striped bass at least once in most publicly accessible reservoirs greater than 2 hectares (5 acres) during the next six years. We are also investigating sampling additional species and habitat assessment procedures.

The IMS statewide sampling strategy provides temporal and spatial data resolution to meet annual and long-term objectives through sampling events of similar intensity but different frequency among reservoirs. Sampled reservoirs will be of two types: reference & systematic.   Sampling reference reservoirs provides the greatest temporal resolution and sampling systematic reservoirs provides the greatest spatial resolution. Each component allows the DOW to provide valuable information to the public while developing long-term datasets to address management and research needs.

REFERENCE RESERVOIRS

All standardized sampling components of the IMS are conducted at reference reservoirs each year. Annual coverage track responses of reservoir ecosystems to long-term changes in nutrient dynamics, aquatic communities, fisheries, and habitats and identify responses to wide-scale systematic perturbations such as weather events or watershed modification. Complete suites of standardized data collected each year at these reservoirs are the key to addressing future habitat changes and potential conflicts among publics with diverse interests.

Reference reservoirs were selected based upon availability of watershed information, historical fisheries and limnological data, sportfish assemblages, and sampling considerations. These reservoirs are geographically distributed throughout Ohio, but are not evenly distributed among DOW districts. Current reference reservoirs are:

- Delaware Reservoir (District 1)
- Pleasant Hill Reservoir (District 2)
- Findlay #2 Upground Reservoir (District 2)
- Berlin Lake (District 3)
- Tappan Lake (District 3)
- Burr Oak Lake (District 4)
- Acton Lake (District 5)

SYSTEMATIC RESERVOIRS AND PRIORITIZATION

Sampling systematically, provides the greatest spatial resolution of data for primary reservoir sportfishes. All standardized sampling components of the IMS are conducted at systematic reservoirs for the species present (except in upground reservoirs, where shoreline electrofishing may be ineffective for some species), but sampling is conducted once or twice during a six-year period rather than every year. This approach provides extensive snapshots of specific populations, rapidly builds a database for statewide perspectives. It also allows benchmarking, and comparisons, and the evaluation of management practices such as stocking or regulation changes. Systematic reservoirs will be sampled at different intervals depending on their priority. A prioritized approach was necessary due to manpower constraints, differences in effort required to assess different species, and different levels of management significance for each species. District biologists established sampling priorities based on their experience, insights and current fishery considerations.

Priority 1 Reservoirs
- Sampling is conducted two consecutive years during a six-year cycle.
- Reservoirs in this group are sampled because of an existing interest such as a new regulation, a new stocking strategy, or development of a new fishery.
- This priority level can be downgraded in the next six-year cycle if desired.

Priority 2 Reservoirs

- Sampling is conducted once every three years (i.e. twice during six years).
- Routine monitoring of regulations or other management actions may be a possibility for this group of reservoirs.

Priority 3 Reservoirs

- Sampling is conducted once every six years to contribute to spatial data and provide general fishery information for anglers.

Priorities of systematic reservoirs can be changed after the first six-year iteration of sampling. Our key concern is to assure that all major sportfishes are sampled at least once every six years, regardless of their priority.

III. LOGISTICS

SAMPLING EVENTS

Definition
- Each type of sampling conducted for a specific purpose on a single reservoir should be considered a single "sampling event". This is true whether a single crew is electrofishing for black bass for one night, two crews are gillnetting for percids for two nights, or one crew is trapnetting for crappie on four consecutive days. Each IMS sampling objective represents a sampling event.
- Defining a sampling event is particularly important when preparing for sampling, recording data during multiple sampling days, or sampling with more than one crew.
- ***It is essential that sample numbers (SampNo), and helpful if fish identification numbers (FishID), are unique for a sampling event. This approach facilitates data entry, proofreading, analysis, and troubleshooting.***

Sampling with Multiple Crews on a Single Day
- Prior to sampling, identify sampling sites and assign unique sample numbers (SampNo) to each crew. For example, crew 1 would be assigned sample numbers 1-4 and crew 2 would be assigned sample numbers 5-8.
- If FishID numbers are required in a protocol, assign a unique series of numbers to each crew. For example, if you know that each crew will not collect more than 500 fish, assign crew 1 FishID numbers 1-500 and assign crew 2 FishID numbers 501-999. These numbers can include more than one species for a sampling event, but should be not be unique for the entire sampling season because they will become large and cumbersome for data entry.

Sampling on Multiple Days with One Crew
- Assign consecutive sample numbers (SampNo) for each day of sampling that begin where sampling left off on the previous day. For example, if 10 nets are set and fished for three consecutive days, assign SampNo 1-10 for nets run on the fist day, 11-20 for nets run on the second day, and 21-30 for nets run on the third day.
- Assign FishID numbers in a consecutive fashion similar to SampNo. For example, if FishID numbers 1-234 were assigned on the first day, start with FishID number 235 on the second day, and continue in this fashion until the sampling event is complete.

Sampling with Multiple Crews on Multiple Days
- Prior to sampling, organize sample numbers (SampNo) for each day that each crew will work to ensure that they do no overlap and are consecutive.
- Prior to sampling, assign FishID numbers to each crew for use throughout the sampling event.
- Coordinate between crews before and after each day of sampling to avoid confusion.

SAMPLING TIMELINE

IMS Sampling is primarily conducted in the spring and fall. Each spring black bass, sunfish, and a combination of black bass and sunfish are sampled with electrofishing. The spring surveys provide population assessments for black bass and general length-frequency information for sunfish. Spring is also the time when hybrid-striped bass populations are assessed with gillnets. During the fall, recruitment and growth of young-of-year percids is determined with electrofishing. Fall is also the time when crappie populations are assessed with trapnets and adult percid populations are assessed with gillnets.
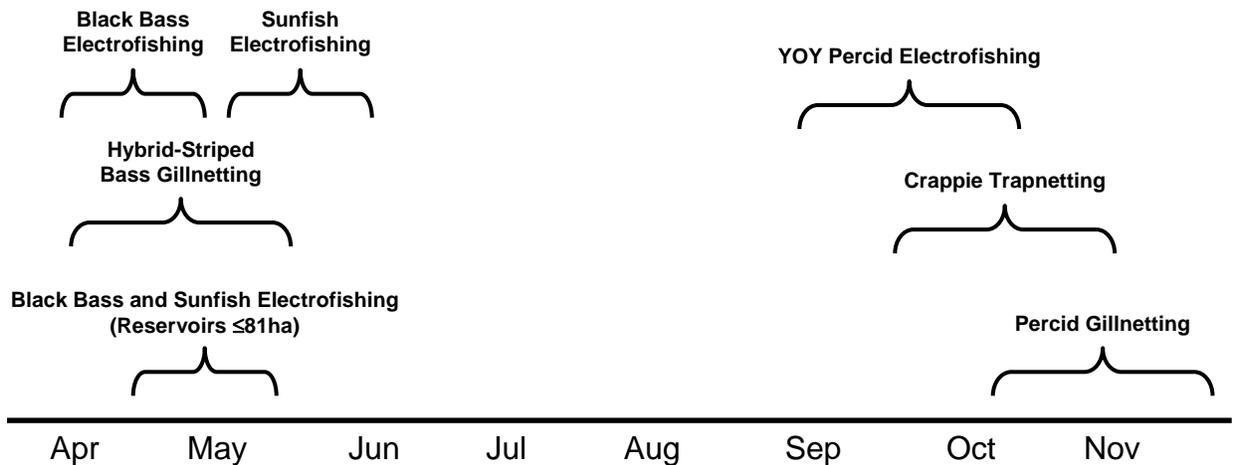
GEOGRAPHICAL REFERENCING FIELD DATA

All Geographic Referencing of IMS data should be in Universal Transverse Mercator (UTM) format, and use NAD27 datum projections. All Ohio UTM data are in UTM zones 16 (western Ohio) and 17 (central and eastern Ohio). Rounding Easting and Northing coordinates is acceptable because most handheld GPS units do not provide greater accuracy. A typical coordinate should be reported as UTM zone 17, 499707 Easting, 4542278 Northing. If greater precision is available, this same location could be recorded as UTM zone 17, 499707.21 Easting, 4542278.43 Northing. Data reported at either level of precision will be accepted in the OFIS database.

RECORDING DATA IN THE FIELD

Field data are recorded on one of five IMS Forms:

- Form 1. Trip Meta-Data
- Form 2. Sample Data
- Form 3. Catch Data
- Form 4. Water Quality Data
- Form 5. Fish Collection Tally Sheet

Forms should be filled out as completely as possible, although use of numeric codes is not necessary for variables such as Species or GearSpec. Examples of using these forms are provided in Appendix C, and blank forms are available as MS Word documents.

DATA HANDLING

Data should be entered in the Ohio Fisheries Information System (OFIS) immediately following collection of field data. The OFIS Manual provides instruction on data entry, codes, and other related information.

Data Entry

- Data collected in conjunction with spring sampling should be entered into OFIS by August 31st of each year.
- Data collected in conjunction with fall sampling should be entered into OFIS by December 31st of each year.

Data Analysis

The following analysis will be conducted for all black bass, bluegill, hybrid-striped bass, and percid species for each reservoir sampled:

- Catch-per-unit effort (# of fish/hour)
- Length frequency

- PSD, RSD
- Relative weight
- Mean length at age

The following analysis will be conducted for all sunfish species other than bluegill sunfish for each reservoir sampled:

- Catch-per-unit effort (# of fish/hour)
- Length frequency

The following analysis will be conducted for YOY percid species for each reservoir sampled:

- Catch-per-unit effort (# of fish/hour)
- Length frequency

The following analysis will be conducted for all crappie species for each reservoir sampled:

- Catch-per-unit effort (# of fish age 1 and older fish/net night)
- Length frequency
- PSD, RSD
- Relative weight
- Size structure (% of age 1 and older fish that are greater than 229 mm)
- Mean length at age
- Age structure (% of age 1 and older fish that are age 4 and older)
- Total annual mortality between ages (if possible)

FISH HANDLING AND DISPOSAL

Sacrificing fish is a necessary part of obtaining complete information for some species. The following guidelines should be followed for proper handling and disposal of fish.

Procedures

Sacrificed fish can be disposed of as follows:

District Disposal. District-specific locations can be used if available.
- Grind, incinerate, or burry on site if facilities and equipment are available to do so. Do not dispose of fish in a trashcan or dumpster.

IFRE Disposal. Fish carcasses may be transported to IFRE for disposal within one day if fresh and one month if frozen if no other site is available for disposal.

Donation for Animal Use. Fish carcasses may be donated to animal care facilities such as zoos or raptor rehabilitation centers.
- District Fish Supervisors are responsible for identifying facilities to which fish are donated and working out related logistics.
- Donated fish carcasses must be bagged and frozen.

Donation for Human Use. *This is not recommended.* However, fish may be processed for human consumption only if they are donated to charitable organizations such as food banks and homeless shelters. District Fish Supervisors are responsible for identifying organizations to which fish are donated and working out related logistics. Please note that fish will be considered unfit for consumption when:
- They have not been carefully handled in the field (i.e. stored in coolers).
- They have been subjected to preservatives or other chemicals.
- A specific species or size is not recommended for consumption.
- They are known to be diseased or parasitized in some way.
- They have gills that are white, flesh that is soft, skin that has fungus, or rib bones that are separating from the flesh.

IV. RESERVOIR HABITAT ASSESSMENT

WATER QUALITY SAMPLING

Sampling Objectives: Collect temperature/oxygen profile and transparency data at the beginning of all sampling events, and additional information at selected times and locations.

Equipment: See equipment checklist in Appendix B.

Sample Site Selection and Effort

Number of sites sampled will be based on reservoir size.

Reservoir size (ha)	Samples (N)	Location
≤41	1	The middle of the reservoir
42-405	2	The dam and the upper basin
≥406	3	The dam, and the middle and lower basins

Data Collection

Temperature and oxygen profiles should be collected as follows:

- <u>Reference Reservoirs:</u> In conjunction with all sampling events, in addition to once during mid-July thru mid-August.
- <u>Systematic Reservoirs:</u> In conjunction with all sampling events.

Collect the following data:

- GPS coordinates and other sample number and site information
- Secchi disk reading (cm)
- Conductivity reading at the surface
- Temperature and dissolved oxygen profiles, beginning at the surface and continuing to the bottom at 1-meter intervals.

V. RESERVOIR FISH POPULATION ASSESSMENT

ELECTROFISHING

Gear Specifications
Standard 17' or 18' electrofishing boat:
- Smith-Root 5.0 GPP pulsator and Honda generator.
- Eight stainless steel electrodes hanging from each ring.
- A minimum of 6 halogen floodlights mounted on the front and side railings.
- 2 dip nets with the following mesh specifications:
  - 13 mm (½") will be used for black bass and sunfish.
  - 6 mm (¼") will be used for young-of-the-year (YOY) percids.
- Pulsator box settings (low power, 3-5.5 amps, pulse rate equal to 60 pulses/s).

General Data Recording (see Appendix C for examples of field form use)
Recording Trip Metadata
- Circle "Yes" under "IMS Sample".
- Use IMS project code for your district or orgunit.
- Date is the date that fish are collected (MM/DD/YYYY).
- Location is the reservoir name or reservoir code.
- Purpose can be listed as "Black Bass Population Assessment", "Black Bass and Sunfish Population Assessment", "Sunfish Population Assessment" or "YOY Percid Assessment".
- Target species is recorded as general black bass (77995), black bass and sunfish combined (77993), sunfish general (77994), or general percids (80901).
- Settings of the pulsator box including amps should be in comments section.

Recording Sampling Data
- Sample numbers (SampNo) are reported consecutively for each event, beginning with sample 1 on the first day of electrofishing, and continuing consecutively until all sampling is completed (this may occur over several days).
- Sample sites (transects) (SampSite in OFIS) are recorded as numeric codes.
- A coordinate should be collected at the beginning of each sample.
- A surface conductivity reading should be collected at the beginning of each sample
- Data are recorded for all samples, including those where no fish were captured (i.e. no fish on an electrofishing run).

- Effort should be recorded as "N" when catch per effort has been compromised by equipment failure or other problems. However, other data, such as fish length should be recorded. Identify gear problems in the metadata comments.
- Effort reduced to less than the standard 5 (sunfish) or 15 (all other species) due to equipment failure or other problems and other comments should be recorded.

Sampling Procedures and Schedules

Black Bass

Sampling Objectives: Estimate abundance, condition, growth, size structure, and age structure.

Sampling Periods and Conditions
- Mid-April thru mid-May (water temperature 15-20 $^\circ$C) beginning at sunset.

Effort and Sample Site Selection
- Effort is 15 minutes per sample (approximately 375 meters).
- Number of samples is based on reservoir size:

Reservoir size (ha)	Samples/night	Nights	Sample sites (transects)
$\leq$81	See page V-7, Black Bass and Sunfish Electrofishing Combined		
82-202	6	1	6
203-405	6	2	12
$\geq$406	6	3	18

- Sample on consecutive nights if possible.
- Stratify reservoirs into 3 basins (upper, middle, and lower) when possible.
- Distribute sample sites (transects) between basins as follows:

Basins (*n*)	Sample sites (transects) per basin				
	Upper	Upper middle	Middle	Lower middle	Lower
	Reservoirs 82-202 ha				
2	3				3
3	2		2		2
4	2	2		1	1
	Sample sites (transects) per basin				

Basins (*n*)	Upper	Upper middle	Middle	Lower middle	Lower
Reservoirs 203-405 ha					
2	6				6
3	4		4		4
4	3	3		3	3
Reservoirs ≥406 ha					
2	9				9
3	6		6		6
4	5	5		4	4

- Within basins, randomly select sample sites (transects) from all 500-m shoreline sites on reservoir sampling maps.
- Sample parallel to the shoreline at depths of 0.3-1.6 m.
- If the selected sample site (transect) is not useable then (by flip of coin or other random manner) move site to the right or left until the next site is found.

Data Collection

Processing Black Bass Samples and Recording Data

- Collect only black bass and record by black bass species.
- Process black bass after each transect. If no black bass were caught, note this on the fish data collection form and continue to the next sample.
- If sample sites are adjacent, release fish so they will not be re-sampled.
- Assign a FishID number to all black bass sampled.
- Measure all black bass (nearest mm TL).
- Weigh (nearest g) 5 black bass per cm group for each species using an electronic balance (or spring scale for weighing large fish).
- Collect scale samples from black bass ≤381 mm that were weighed.
- Remove scales from the left side of the fish near the tip of a depressed pectoral fin, below the lateral line.
- Store scales in a coin envelope labeled with the reservoir name, date, FishID number, and length.
- After scales are collected, black bass should be released.
- Read scales to determine if black bass are age 1, 2, 3, or >3, and record age in the database unless black bass are >3. If black bass are >3, then leave age blank in database.

SAMPLING SCHEDULE: Black Bass Electrofishing

Note: Priority levels abbreviated "R" designate reference reservoir in all sampling schedules.

District 1: Black Bass Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Alum Creek	2	X			X		
Buckeye	3	X					
Deer Creek	3					X	
Delaware	R	X	X	X	X	X	X
Griggs	3			X			
Hoover	3		X				
Indian	2			X			X
Kiser	2	X			X		
Knox	2	X			X		
O'Shaughnessy	2		X			X	
Rush Creek	3						X

District 2: Black Bass Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Charles Mill	1	X	X				
Clear Fork	1	X	X				
Ferguson	1					X	X
Killdeer	1			X	X		
New London	1					X	X
Pleasant Hill	R	X	X	X	X	X	X

District 3: Black Bass Electrofishing, 2003-2008

Reservoir	Priority	Year 2003	2004	2005	2006	2007	2008
Atwood	2		X			X	
Berlin	R	X	X	X	X	X	X
Clendening	1	X	X				
Dale Walborn	3						X
Deer Creek	3				X		
East Branch	3		X				
East Reservoir – Portage	3					X	
Guilford	2		X			X	
LaDue	1					X	X
Lake Milton	2			X			X
Leesville	2			X			X
Long Lake – Portage	1			X	X		
Mogadore	2			X			X
Mosquito	2	X			X		
Nimisila	2	X			X		
Pymatuning	2		X			X	
Springfield	3			X			
Tappan	R	X	X	X	X	X	X
Turkeyfoot – Portage	1			X	X		
West Branch	3					X	

District 4: Black Bass Electrofishing, 2003-2008

Reservoir	Priority	Year 2003	2004	2005	2006	2007	2008
Burr Oak	R	X	X	X	X	X	X
Dillon	3		X				
Jackson	3			X			
Logan	3					X	
Piedmont	3				X		
Rupert	2			X			X
Salt Fork	2			X			X
Seneca	2	X			X		
White	3		X				
Wills Creek	3					X	

District 5: Black Bass Electrofishing, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Acton	R	X	X	X	X	X	X
Caesar Creek	3	X					
C. J. Brown	3				X		
Cowan	3			X			
East Fork	2		X			X	
Grand Lake St. Mary's	2		X			X	
Lake Loramie	3						X
Paint Creek	2			X			X
Rocky Fork	2	X			X		

Black Bass and Sunfish Combined

Sampling Objectives:

- Black Bass and bluegill sunfish: estimate relative abundance, condition, growth, size structure, and age structure.
- Sunfish other than bluegill: estimate relative abundance and size structure.

Sampling Periods and Conditions

- May (water temperature 18-22 °C). Sample reservoirs at night, EXCEPT where typical mid-reservoir secchi transparency readings are <1 m during May.

Effort and Sample Site Selection

- Effort is 15 minutes for black bass (375 m) and 5 minutes for sunfish (125 m), alternating between species.
- Separate sample numbers must be recorded for each electrofishing run. For example, 1 for black bass, 2 for sunfish, 3 for black bass, 4 for sunfish, etc.
- The number of samples is based on reservoir size:

Reservoir size (ha)	Samples/day	Days	Sample sites (transects)
$\leq$41	4	1	4
42-81	6	1	6

- Stratify reservoirs into 3 basins when possible.
- Distribute sample sites (transects) between basins as follows:

	Sample sites (transects) per basin		
Basins (*n*)	Upper	Middle	Lower
Reservoirs $\leq$41 ha			
2	2		2
3	2	1	1
Reservoirs 42-81 ha			
2	3		3
3	2	2	2

- Within basins, randomly select sample sites (transects) from all 500-m shoreline sites on reservoir sampling maps.
- Sample parallel to the shoreline at depths of 0.3-1.6 m.
- If the selected sample site (transects) is not useable then (by flip of coin or other random manner) move site to the right or left until the next site is found.

Data Collection

Processing Black Bass and Sunfish Samples and Recording Fish Data

- For each 20-min sample:
    - Collect sunfish only during the first 5 min.
    - Collect black bass only during the final 15 min.
- Record data by species.
- Process fish after each sample. If no fish were caught, note this on all forms and continue to the next sample.
- If sample sites are adjacent, release fish so they will not be re-sampled.
- Assign a FishID number to all fish.

Black bass

- Identify species and measure all black bass (nearest mm TL).
- Weigh (nearest g) 5 black bass per cm group for each species using an electronic balance (or a spring scale can be used for large fish).
- Collect scale samples from black bass ≤381 mm that were weighed.
- Remove scales from the left side of the fish near the tip of a depressed pectoral fin, below the lateral line.
- Store in a coin envelope labeled with the reservoir name, date, FishID number, and length.
- Release black bass after processing.

Sunfish

- For all sunfish <100 mm:
    - Measure (nearest mm TL) the first 100 bluegill and concurrently measure and release all other Lepomis.
    - Once 100 bluegill <100 mm have been measured, remaining sunfish should be identified to species, enumerated, and released without being measured (i.e. grouped by species).
- For all sunfish (except bluegill) ≥100 mm, measure (nearest mm TL) and release.
- For bluegill sunfish ≥100 mm:
    - Measure all fish (nearest mm TL).
    - Weigh (nearest g) 10 bluegill sunfish per cm group using an electronic balance.
    - Remove otoliths from fish that were weighed. Fish can be processed after each net pull or stored in a plastic bag with a corresponding sample number or label, placed in a cooler, and processed in the lab.

SAMPLING SCHEDULE: Black Bass and Sunfish Electrofishing Combined

District 1: Black Bass and Sunfish Electrofishing Combined, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Hargus	2			X			X
Kokosing	2		X			X	
Madison	2			X			X
Oakthorpe	2			X			X

District 2: Black Bass and Sunfish Electrofishing Combined, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Aldrich	3				X		
Amick	3		X				
Archbold #1	3			X			
Beaver Creek	1	X	X				
Bellevue #4	3					X	
Bucyrus #1	3						X
Bucyrus #2	3			X			
Delta #1	3				X		
Fulton	3			X			
Harrison	3			X			
Killdeer #30	3			X			
Killdeer #33	3			X			
LeComte	3					X	
Lamberjack	3		X				
Leipsic	3				X		
Lima	2			X			X
Lost Creek	3					X	
Maumee Bay	3				X		
McComb #2	3					X	
Monroeville	3					X	
Mosier	3		X				
North Baltimore #2	3			X			
Nettle Lake	3						X
Norwalk #1	3					X	
Norwalk #2	3					X	
Norwalk #3	3					X	
Olander	3				X		
Ottawa	3				X		
Oxbow	1	X	X		X		
Powers	3		X				
Resthaven #7	3						X
Resthaven #8	1	X	X				
Riley	3			X			
Schoonover	3				X		
Shelby #3	3						X
Swanton	3			X			
Upper Sandusky #1	3						X
Upper Sandusky #2	3						X
Van Buren	3		X				
Van Wert #1	3		X				
Van Wert #2	3		X				
Veterans Memorial	2			X			X
Wauseon #2	1	X	X				

District 3: Black Bass and Sunfish Electrofishing Combined, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Aquilla	3						X
Findley	3				X		
Highlandtown	2		X			X	
Jefferson	3					X	
New Lyme	3					X	
North Reservoir – Portage	2			X			X
Petros	3				X		
Punderson	3				X		
Shreve	3				X		
Silver Creek	3			X			
Sippo	2		X			X	
Spencer	1		X	X			
Wellington South	3		X				
West Reservoir – Portage	2			X			X
Zepernick	3						X

District 4: Black Bass and Sunfish Electrofishing Combined, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Alma	3			X			
Barnsville #3	3				X		
Belmont	3				X		
Clouse	3					X	
Dow	3		X				
Forked Run	3		X				
Fox	3						X
Hope	3		X				
Jackson City	3			X			
Monroe	3				X		
Ross	3	X					
Snowden	3						X
Timbre Ridge	3					X	
Tycoon	2	X			X		
Vesuvius	3					X	
Veto	3						X
Wolf Run	3			X			

District 5: Black Bass and Sunfish Electrofishing Combined, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Adams	3		X				
Clark	3				X		
Eastwood	3			X			
Grant	3						X
Rush Run	3		X				
Stonelick	3					X	

Sunfish

Sampling Objectives

- Bluegill: estimate relative abundance, condition, growth, size structure, and age structure.
- Sunfish other than bluegill: estimate relative abundance and size structure.

Sampling Periods and Conditions

- Mid-May thru mid-June (water temperatures 20-25 ^{o}C) during the day, starting at any time.

Effort and Sample Site Selection

- Effort is 5 minutes per sample (approximately 125 meters).
- Conduct 12 samples on reservoirs $\geq$82 ha (for reservoirs $\leq$81 ha, see page V-7, Black Bass and Sunfish Electrofishing Combined).
- Stratify reservoirs into 3 basins.
- If necessary, take all samples in the middle basin to reduce travel time.
- Within the middle basin, randomly select sample sites (transects) from all possible shoreline sites marked on a reservoir map.
- Sample parallel to the shoreline at depths of 0.3-1.6 m.
- If the selected sample site (transect) is not useable then (by flip of coin or other random manner) move site to the right or left until the next site is found.

Data Collection

Processing Sunfish Samples and Recording Fish Data

- Collect only sunfish, and record by species.
- Process sunfish after each sample. If no sunfish were caught, note this on all forms and continue to the next sample.
- If sample sites (transects) are adjacent, released sunfish so they will not be re-sampled.
- Assign a FishID number to all sunfish sampled.
- For all sunfish <100 mm:
  - Measure (nearest mm TL) the first 100 bluegill and concurrently measure and release all other Lepomis.
  - Once 100 bluegill <100 mm have been measured, remaining sunfish should be identified to species, enumerated, and released without being measured (i.e. grouped by species).
- For all sunfish (except bluegill) $\geq$100 mm, measure (nearest mm TL) and release.

- For bluegill sunfish ≥100 mm:
  - Measure all fish (nearest mm TL).
  - Weigh (nearest g) 10 bluegill sunfish per cm group using an electronic balance.
  - Remove otoliths from fish that were weighed. Fish can be processed after each net pull or stored in a plastic bag with a corresponding sample number or label, placed in a cooler, and processed in the lab.

SAMPLING SCHEDULE: Sunfish Electrofishing

District 1: Sunfish Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Alum Creek	2	X			X		
Buckeye	2	X			X		
Deer Creek	2		X			X	
Delaware	R	X	X	X	X	X	X
Griggs	2		X			X	
Hoover	2			X			X
Indian	2			X			X
Kiser	2	X			X		
Knox	2	X			X		
O'Shaughnessy	2		X			X	
Rush Creek	2		X			X	

District 2: Sunfish Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Charles Mill	3	X					
Clear Fork	3	X					
Pleasant Hill	R	X	X	X	X	X	X

District 3: Sunfish Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Atwood	2		X			X	
Berlin	R	X	X	X	X	X	X
Clendening	3	X					
Dale Walborn	3				X		
Deer Creek	3						X
East Branch	3					X	
East Reservoir – Portage	2			X			X
Guilford	3		X				
LaDue	3			X			
Lake Milton	2		X			X	
Leesville	3		X				
Long Lake - Portage	3				X		
Mogadore	2			X			X
Mosquito	3	X					
Nimisila	3	X					
Pymatuning	2		X			X	
Springfield	3			X			
Tappan	R	X	X	X	X	X	X
Turkeyfoot - Portage	2			X			X
West Branch	3					X	

District 4: Sunfish Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Burr Oak	R	X	X	X	X	X	X
Dillon	3				X		
Jackson	3						X
Logan	3		X				
Piedmont	3			X			
Rupert	3					X	
Salt Fork	3						X
Seneca	3	X					
White	3					X	
Wills Creek	3				X		

District 5: Sunfish Electrofishing, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
				Year			
Acton	R	X	X	X	X	X	X
Caesar Creek	3	X					
C. J. Brown	3						X
Cowan	3				X		
East Fork	3			X			
Grand Lake St. Mary's	3		X				
Lake Loramie	3		X				
Paint Creek	3					X	
Rocky Fork	3	X					

Young-of-Year Percids

Sampling Objectives
- Age-0 percids: estimate relative abundance and growth.

Sampling Periods and Conditions
- Mid-September thru October (water temperatures <20 ^{o}C), beginning at sunset.

Effort and Sample Site Selection
- Effort is 15 minutes per sample (approximately 375 meters).
- The number of samples is based on reservoir size:

Reservoir size (ha)	Samples/night	Nights	Sample sites (transects)
<202	6	1	6
>203	6	2	12

- Sample on consecutive nights if possible.
- Stratify reservoirs into 3 basins if possible.
- Distribute sample sites (transects) between basins as follows:

Basins (*n*)	Sample sites (transects) per basin				
	Upper	Upper middle	Middle	Lower middle	Lower
Reservoirs <202 ha					
2	3				3
3	2		2		2
4	2	2		1	1
Reservoirs >203 ha					
2	6				6
3	4		4		4
4	3	3		3	3

- Within basins, sample sites (transects) are randomly selected from all possible shoreline sites marked on a reservoir map.
- Sample parallel to the shoreline at depths of 0.3-1.6 m.
- If the selected sample site (transect) is not useable then (by flip of coin or other random manner) move site to the right or left until the next site is found.

Data Collection

Processing Fish Samples and Recording Fish Data

- Collect only YOY percids and record by species.
- Process fish after each sample; if no fish were caught, note this on all forms and continue to the next sample.
- If sample sites (transects) are adjacent, released fish so they will not be re-sampled.
- Assign a FishID number to all YOY percids.
- Measure all YOY percids (nearest mm TL).
- Collect scales from 3 fish per cm group for each species of YOY percids between 200 and 350 mm.
- Collected from the left side of the fish above the lateral line and below the dorsal fin.
- Store scales in a coin envelope labeled with the reservoir name, date, FishID number, and length.
- After processing YOY percids should be released.

SAMPLING SCHEDULE: YOY Percid Electrofishing

District 1: YOY Percid Electrofishing, 2003-2008

Reservoir	Priority	Year 2003	2004	2005	2006	2007	2008
Alum Creek	1	X	X			X	
Buckeye	2		X			X	
Deer Creek	3				X		
Delaware	R	X	X	X	X	X	X
Griggs	3				X		
Hoover	2			X			X
Indian	3	X					
Kiser	2	X			X		
O'Shaughnessy	2			X			X

District 2: YOY Percid Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Beaver Creek	3	X					
Charles Mill	2		X		X		
Ferguson	3		X				
Findlay #2	3	X	X	X	X	X	X
New London	3		X				
Pleasant Hill	R	X	X	X	X	X	X

District 3: YOY Percid Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Atwood	1	X	X				
Berlin	R	X	X	X	X	X	X
Clendening	2		X			X	
Dale Walborn	3				X		
LaDue	3						X
Lake Milton	3			X			
Leesville	2	X			X		
Mosquito	1			X	X		
Nimisila	3	X					
Pymatuning	1					X	X
Springfield	2			X			X
Tappan	R	X	X	X	X	X	X
Turkeyfoot – Portage	3		X				

District 4: YOY Percid Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Burr Oak	R	X	X	X	X	X	X
Belmont	3					X	
Dillon	3				X		
Hope	3			X			
Jackson City	3					X	
Logan	3				X		
Piedmont	1	X	X				
Rupert	3					X	
Salt Fork	3		X				
Seneca	3			X			
Snowden	3			X			
White	3						X
Wills Creek	3	X					
Wolf Run	3						X

District 5: YOY Percid Electrofishing, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Acton	R		X	X	X	X	X
Caesar Creek	2			X			X
C. J. Brown	3						X
Cowan	2		X			X	
East Fork	3					X	
Eastwood	3					X	
Grand Lake St. Mary's	1			X	X		
Lake Loramie	2	X			X		
Paint Creek	1	X	X				
Rocky Fork	2	X			X		

TRAPNETTING

Gear Specifications

Standardized trapnets (Missouri-style trapnets)

- Two 92 cm (36") X 184 cm (72") fiberglass or steel frames with center braces and four 76 cm (30") diameter fiberglass or steel hoops arranged as follows.
    - The frames are 76 cm (30") apart.
    - The first hoop is 81 cm (32") from the second frame.
    - Hoops are 61 cm (24") apart.
    - The second frame has a slit throat and the first hoop is the only one with a throat.
    - Net material is 13 mm (½") square no. 126 knotless nylon treated with Netset.
    - Cod end has a draw string closure with a 152 cm (60") no. 5 braided nylon string.
- A single 107 cm (42") deep lead is attached to the center brace of the first frame, and is constructed as follows.
    - 13 mm (½") mesh square no. 126 knotless nylon hung on 516-braided polypropylene and treated with Netset.
    - 51-mm (2") X 38-mm (1½") floats (SB-2) spaced at 61 cm (24") intervals
    - 57-g (2-oz) weights spaced at 61 cm (24") intervals.
    - Length of the lead is 21 m (70').

General Data Recording (see Appendix C for examples of field form use)

Recording Trip Metadata

- Circle "Yes" under "IMS Sample".
- Use IMS project code for your district or orgunit.
- Date is the date that fish are collected (MM/DD/YYYY).
- Location is the reservoir name or reservoir code.
- Purpose can be listed as "Crappie Population Assessment."
- Target species is recorded as general crappie (77906).

Recording Sampling Data

- Sample numbers (SampNo) are reported consecutively for each event, beginning with sample 1 on the first day of trapnetting, and continuing consecutively until all sampling is completed.
- Sample sites (SampSite in OFIS) are recorded as numeric codes.
- A coordinate should be collected at each sample site.

- Record sample data for each net, including empty nets.
- Do not record effort from nets which have been significantly vandalized or disturbed, or could not be fished in 24 hours due to inclement weather. In these cases, report "N" for effort. However, all other data should be collected and recorded. Specific problem should be recorded in the metadata comments.

Sampling Procedures and Schedules

<u>**Crappie**</u>

Sampling Objectives: Estimate relative abundance, condition, growth, size structure, and age structure of white crappie and black crappie (one, or both species if present).

Sampling Period and Conditions
- Sample during October thru mid-November (water temperatures near 15 $^{\circ}$C).

Effort and Sample Site Selection
- Number of samples (net sets) and sampling sites are based on reservoir size.

Reservoir size (ha)	Nets	Sets/night	Nights	Net nights
<u><</u>81	5	1	4	20
82-202	10	1	2	20
<u>></u>203	10	1	3	30

- For reservoirs >202 ha, evaluation of past data may indicate that low precision results from only 30 net nights of effort. In these situations, an extra night of sampling will be conducted. Number of net nights for these reservoirs will be 40.
- Sample on consecutive nights.
- Each sample represents approximately 24 hours of effort (1440 minutes).
- Sampling Site Selection
     <u>For reservoirs not previously sampled</u>:
     - Try to locate sites near sloping points or other features in 2-5 meter depths adjacent to deep water, such as the creek channel, if possible
     - Randomly choose net sites from the entire pool of possible nets sites
     <u>For reservoirs previously sampled</u>:
     - Randomly choose sampling sites from a pool of possible locations within each basin.
- Stratify reservoirs into 3 basins when possible.

- Distribute sampling sites between basins as follows:

Basins	Nets per basin				
	Upper	Upper middle	Middle	Lower middle	Lower
Reservoirs <81 ha					
2	3				2
3	2		2		1
Reservoirs >82 ha					
2	6				4
3	4		4		2
4	3	3		2	2

- If the selected sampling site is not useable then (by flip of coin or other random manner) move site to the right or left until the next suitable site is found.

Data Collection

Processing Fish Samples and Recording Fish Data

- Nets should be retrieved in the order in which they were set
- As each net is emptied, store fish in a tub or plastic bag with a corresponding sample number or label and place in a cooler. Alternately, fish can be processed after each net pull. ***Processing fish on the reservoir after each net pull is not recommended.***
- Bycatch should be released immediately or, if survival is unlikely, placed in trash containers for transport for disposal off site.
- If no fish were caught, note this on catch data form and continue to the next net.
- Record crappie species and length (TL mm) and assign a FishID number to all crappie.
- Weigh (nearest g) 5 crappie per cm group for each species using an electronic balance.
- Remove otoliths according to the following procedures:
  - Age-0 Crappie (fish <120 mm). Remove otoliths from the first 10 crappie caught of each crappie species and store in a labeled coin envelope.
  - Age-1 and Older Crappie (fish >110 mm). Remove otoliths from all crappie (total catch) from every other net. Remove both otoliths, store in a coin envelope labeled with the location, date, and FishID number. Once the number of otolith samples reaches 200 for each crappie species, discontinue removing otoliths. If you will not catch enough fish to reach the 200 fish target, then keep fish from all nets.

SAMPLING SCHEDULE: Crappie Trapnetting

District 1: Crappie Trapnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Alum Creek	1			X	X		
Buckeye	3					X	
Deer Creek	1			X	X		
Delaware	R	X	X	X	X	X	X
Griggs	3		X				
Hargus	3			X			
Hoover	3						X
Indian	3						X
Kiser	3						X
Knox	3	X					
Kokosing	3	X					
Madison	3				X		
O'Shaughnessy	3		X				
Rush Creek	3					X	

District 2: Crappie Trapnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Bresler	3						X
Charles Mill	3			X			
Clear Fork	3				X		
Ferguson	3						X
Findlay #2	1	X	X				
Harrison	3			X			
LeComte	3	X					
Lima	3					X	
Lost Creek	3					X	
Metzger	3				X		
Nettle	3		X				
Pleasant Hill	R	X	X	X	X	X	X
Veteran's Memorial	3	X					

District 3: Crappie Trapnetting, 2003-2008

Reservoir	Priority	Year 2003	2004	2005	2006	2007	2008
Atwood	2	X			X		
Berlin	R	X	X	X	X	X	X
Clendening	3			X			
Dale Walborn	3				X		
Deer Creek	3						X
East Branch	3		X				
East Reservoir – Portage	2		X			X	
Guilford	3					X	
Highlandtown	2			X			X
LaDue	2		X			X	
Lake Milton	2			X			X
Leesville	2		X			X	
Long Lake – Portage	2	X			X		
Mogadore	3			X			
Mosquito	1	X	X				
Nimisila	3	X					
North Reservoir – Portage	2	X			X		
Pymatuning	1			X	X		
Springfield	3	X					
Tappan	R	X	X	X	X	X	X
Turkeyfoot – Portage	2		X			X	
West Branch	3						X
West Reservoir – Portage	2			X			X

District 4: Crappie Trapnetting, 2003-2008

Reservoir	Priority	Year 2003	2004	2005	2006	2007	2008
Burr Oak	R	X	X	X	X	X	X
Dillon	3					X	
Jackson	3				X		
Logan	3			X			
Piedmont	3						X
Rupert	3			X			
Salt Fork	3						X
Seneca	1	X	X				
White	3				X		
Wills Creek	3					X	

District 5: Crappie Trapnetting, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Acton	R	X	X	X	X	X	X
Caesar Creek	1			X	X		
C. J. Brown	3		X				
Clark	3					X	
Cowan	3			X			
East Fork	3						X
Eastwood	3	X					
Grand Lake St. Mary's	3	X					
Grant	3		X				
Lake Loramie	3					X	
Paint Creek	3	X					
Rocky Fork	3				X		
Stonelick	3						X

GILLNETTING

Gear Specifications

Standardized gillnets:

- Gillnets will be 54.9 m (180') long by 1.8 m (6') deep, consisting of six 9.15-m (30') panels of different mesh size.
- Bar measure sizes for the five panels hung in order from the smallest to largest: will be 19 mm (¾"), 25 mm (1"), 38 mm (1½"), 51 mm (2"), 64 mm (2½"), and 76 mm (3").
- Panels must be constructed of monofilament webbing material.
- Float lines will consist of foam core rope.
- Lead lines will consist of lead core rope.

General Data Recording (see Appendix C for examples of field form use)

Recording Trip Metadata

- Circle "Yes" under "IMS Sample".
- Use IMS project code for your district or orgunit.
- Date is the date that fish are collected (MM/DD/YYYY).
- Location is the reservoir name or reservoir code.
- Purpose can be listed as "Hybrid-Striped Bass Population Assessment" or "Percid Population Assessment."
- Target species is recorded as either hybrid-striped bass (74005) or general percids (80901).

Recording Sampling Data

- Sample numbers (SampNo) are reported consecutively for each event, beginning with sample 1, and continuing consecutively until all sampling is completed.
- Sample sites (SampSite in OFIS) are recorded as numeric codes.
- A coordinate should be collected at each sample site.
- Record sample data for each net, including empty nets.
- Do not record effort from nets which have been significantly vandalized or disturbed, or could not be fished due to inclement weather. In these cases, report "N" for effort. However, all other data should be collected and recorded. Specific problem should be recorded in the metadata comments.

Sampling Procedures and Schedules

Hybrid-Striped Bass

Sampling Objectives: Estimate relative abundance, condition, growth, size structure, and age structure of hybrid-striped bass.

Sampling Periods and Conditions

- Sample during mid-April thru May (water temperatures 10 -20 ^{o}C).

Effort and Sample Site Selection

- Set nets during daylight hours for a total of 2 hours of effort (120 minutes).
- Sampling consists of 6 nets set on each of two days.
- Sample on consecutive days if possible.
- After each day, move nets to different sampling sites.
- Sampling Site Selection

  For reservoirs not previously sampled:

  - Try to locate sites near sloping points or other features in 2-5 meter depths adjacent to deep water if possible.
  - Randomly choose net sites from the entire pool of possible nets sites.

  For reservoirs previously sampled:

  - Randomly choose sampling sites from a pool of possible locations within each basin.
- Stratify reservoirs into 3 basins if possible.
- Distribute sampling sites between basins as follows:

	Sample sites per basin				
Basins (*n*)	**Upper**	**Upper middle**	**Middle**	**Lower middle**	**Lower**
2	6				6
3	4		4		4
4	3	3		3	3

- Set nets on the bottom oriented perpendicular to the nearest shoreline with the smallest mesh adjacent to the shoreline.
- If the selected sampling site is not useable then (by flip of coin or other random manner) move site to the right or left until the next pre-selected site is found.
- In reservoirs where bycatch is high, set times for nets can be staggered.

Data Collection

Processing Fish Samples and Recording Fish Data

- Fish should be processed after each net pull. If no fish were caught, note this on all forms and continue to the next net.
- Record data from fish and record species as appropriate code.
- Assign a FishID number to all percids and morones sampled. FishID numbers are unique for each fish.
- Bycatch should be released immediately or, if survival is unlikely, placed in trash containers for transport back to the lab.
- Measure all hybrid-striped bass (nearest mm TL).
- Weigh (nearest g) 5 hybrid-striped bass per cm group using an electronic balance (or spring scale for weighing large fish).
- Collect scale samples from hybrid-striped bass that were also weighed.
- Remove scales from the left side of the fish near the tip of a depressed pectoral fin, below the lateral line.
- Store scales in a coin envelope labeled with the reservoir name, date, FishID number, and length.
- Keep 3 hybrid-striped bass per cm group for removal of otoliths.
- Release percids only if mortality is not evident. If mortality is evident, place fish in trash containers for transport back to the lab.
- Label bags of hybrid-striped bass collected for otolith removal (reservoir name, date, and sample number), place on ice, and transported back to the lab.

SAMPLING SCHEDULE: Hybrid-Striped Bass Gillnetting

District 1: Hybrid-Striped Bass Gillnetting, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Buckeye	1	X	X				
Kiser	1	X	X				

District 2: Hybrid-Striped Bass Gillnetting, 2003-2008

Reservoir	Priority	Year					
		2003	2004	2005	2006	2007	2008
Charles Mill	1	X	X				

District 5: Hybrid-Striped Bass Gillnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
		Year					
East Fork	1		X	X			

Percids

Sampling Objectives: Estimate relative abundance, condition, growth, size structure, and age structure of adult walleye and saugeye.

Sampling Periods and Conditions

- Sample during mid-October thru November (water temperatures 7-15 ^{o}C).

Effort and Sample Site Selection

- Set nets approximately 2 hours before sunset and pull 2 hours after sunset for a minimum total of 4 hours of effort (240 minutes).
- The number of net sets and sampling sites is based on reservoir size.

Reservoir size (ha)	Nets	Sets/night	Nights	Sites sampled
≤81	4	1	1	4
82-405	4	1	2	8
≥406	4	1	3	12

- Sample on consecutive nights if possible.
- After each night, move nets to different sampling sites.
- Sampling Site Selection
  For reservoirs not previously sampled:
  - Try to locate sites near sloping points or other features in 2-5 meter depths adjacent to deep water, such as the creek channel, if possible.
  - Randomly choose net sites from the entire pool of possible nets sites.
  For reservoirs previously sampled:
  - Randomly choose sampling sites from a pool of possible locations within each basin.
- Stratify reservoirs into 3 basins if possible.
- Distribute sampling sites between basins as follows:

Basins (*n*)	Sample sites per basin				
	Upper	Upper middle	Middle	Lower middle	Lower
Reservoirs <81 ha					
2	2				2
3	2		1		1
Reservoirs 82-405 ha					
2	4				4
3	3		3		2
4	2	2		2	2
Reservoirs >406 ha					
2	6				6
3	4		4		4
4	3	3		3	3

- Set nets on the bottom oriented perpendicular to the nearest shoreline with the smallest mesh adjacent to the shoreline.
- If the selected sampling site is not useable then (by flip of coin or other random manner) move site to the right or left until the next pre-selected site is found.
- In reservoirs where bycatch is high, set times for nets can be staggered.

Data Collection

Processing Fish Samples and Recording Fish Data

- Fish should be processed after each net pull. If no fish were caught, note this on all forms and continue to the next net.
- Record data from fish and record species as appropriate code.
- Assign a FishID number to all percids, morones, and catfish sampled. FishID numbers are unique for each fish.
- Bycatch should be released immediately or, if survival is unlikely, placed in trash containers for transport back to the lab.

   Channel Catfish and Morone species (bycatch of interest):
   - Measure all channel catfish and morone species (nearest mm TL).
   - After measurements are taken, all channel catfish and morone species should be released or, if survival is unlikely, placed in trash containers for transport back to the lab.

   Percids (target species):
   - A target number of 200 percids will be kept (sacrificed) as follows.
     On the first night of sampling**:**
     - Keep all percids until 200-fish target are collected.
     - Measure and release (nearest mm TL) all remaining percids.

On the second night of sampling**:**

- ◆ If ≥200 percids were kept during the first night of sampling, then all percids will be measured (nearest mm TL) and released.
- ◆ If 100-199 percids were kept during the first night of sampling, then percids will be sacrificed from alternate samples (beginning with the first net) until the 200-fish target is reached; percids from remaining nets will be measured (nearest mm TL) and released.
- ◆ If <100 percids were sacrificed during the first night of sampling, then all percids will be kept until 200 are collected; percids from remaining nets will be measured and released.

On the third night of sampling (for reservoirs >405 ha):

- ◆ If ≥200 percids were kept during the first two nights of sampling, then all percids will be measured and released.
- ◆ If 100-199 percids were kept during the first two nights of sampling, then percids will be kept from alternate samples (beginning with the first net) until a total of 200 fish are collected; percids from remaining nets will be measured and released.
- ◆ If <100 percids were kept during the first two nights of sampling, then all percids will be kept until 200 fish are collected; percids from remaining nets will be measured and released.

- *__Note__: If the 200-fish target is reached in mid-pull, then keep all fish remaining in that net.*
- Release percids only if mortality is not evident. If mortality is evident, label the fish in a sample bag (reservoir name, date, and sample number), place on ice, and transported to the lab.
- Label bags of percids collected for otolith removal (reservoir name, date, and sample number), place on ice, and transported back to the lab.
- Prior to otolith removal, all fish will be measured (nearest mm TL) and 5 individuals per cm group for each species will be weighed (nearest g) using an electronic balance (or spring scale for weighing large fish).

SAMPLING SCHEDULE: Percid Gillnetting

District 1: Percid Gillnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
				Year			
Alum Creek	1	X	X			X	
Buckeye	2		X			X	
Deer Creek	3				X		
Delaware	R	X	X	X	X	X	X
Griggs	3				X		
Hoover	2			X			X
Indian	3	X					
O'Shaughnessy	2			X			X

District 2: Percid Gillnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Ammick	3					X	
Archibold #2	2			X			X
Beaver Creek	2	X			X		
Bellevue #5	2			X			X
Bresler	1	X	X		X		
Charles Mill	2	X			X		
Delta #2	2			X			X
Ferguson	2		X			X	
Findlay #1	2		X			X	
Findlay #2	1	X	X		X		
Killdeer	2			X			X
LeComte	2			X			X
Lima	2	X			X		
Lost Creek	2			X			X
McComb #2	3					X	
Metzger	2		X			X	
North Baltimore #2	2			X			X
New London	2		X			X	
Norwalk #3	3					X	
Ottawa	2			X			X
Outhwaite	2		X			X	
Paulding	2	X			X		
Pleasant Hill	R	X	X	X	X	X	X
Powers	3					X	
Raccoon Creek	2			X			X
Riley	2			X			X
Shelby #3	2	X			X		
Upper Sandusky #1	2			X			X
Upper Sandusky #2	2			X			X
Van Wert #1	2	X			X		
Van Wert #2	2	X			X		
Veteran's Memorial	2		X			X	
Wauseon #2	2	X			X		
Willard	2		X			X	

District 3: Percid Gillnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
				Year			
Atwood	1	X	X				
Berlin	R	X	X	X	X	X	X
Clendening	2		X			X	
Dale Walborn	3				X		
LaDue	3						X
Lake Milton	3			X			
Leesville	2	X			X		
Mosquito	1			X	X		
Nimisila	3	X					
Pymatuning	1					X	X
Springfield	2			X			X
Tappan	R	X	X	X	X	X	X
Turkeyfoot – Portage	3		X				

District 4: Percid Gillnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
				Year			
Burr Oak	R	X	X	X	X	X	X
Belmont	3					X	
Dillon	3				X		
Hope	3			X			
Jackson City	3					X	
Logan	3				X		
Piedmont	1	X	X				
Rupert	3					X	
Salt Fork	3		X				
Seneca	3			X			
Snowden	3			X			
White	3						X
Wills Creek	3	X					
Wolf Run	3						X

District 5: Percid Gillnetting, 2003-2008

Reservoir	Priority	2003	2004	2005	2006	2007	2008
Acton	R		X	X	X	X	X
Caesar Creek	2			X			X
C. J. Brown	3						X
Cowan	2		X			X	
East Fork	3					X	
Grand Lake St. Mary's	1			X	X		
Lake Loramie	2	X			X		
Paint Creek	1	X	X				
Rocky Fork	2	X			X		

VI. OTOLITH AND SCALE PROCESSING

Objectives: Determine growth (mean length at age) and age structure of fish populations.

Equipment Needed

- Dissecting microscope (8-40X magnification)
- Glycerin
- Measuring board
- Micro-projector/microfiche reader
- OFIS forms
- Plastic vials
- Scale press
- Electric balance
- Knife
- Mounting adhesive
- Mounting medium
- Pencils
- Regular and acetate slides
- Spring scale

Data Processing

Field Forms

- Form 4.0: Variable Definitions for Fish Age & Growth sheet
- Form 4.1: Age, Growth, and Back-calculation Datasheet
- Form 4.2: Age & Growth Datasheet (typically used for age 1 vs. age 0 determination)

Scales

- Scales will be either compressed in a microfiche or mounted on glass slides or pressed into acetate using a scale press.
- Scales will be read using a microprojector or microfiche reader magnified to achieve maximum clarity and size (8 – 40X magnification).
- Read scales to determine fish age only. We are not back-calculating growth at this time.

Otoliths

- Read otoliths using a dissecting microscope (8-40X magnification).

  Wholes View. Otoliths from All crappie, bluegill, and young percid can be immersed in glycerin or water and read whole view. Difficult to read otoliths can be cracked to read cross sections.

  Cross Sections. Otoliths that cannot be read in whole view, such as those from older crappie, bluegill, and most percids should be cracked and a cross section can then be read.

  - Place cracked otoliths in a medium (clay, agar, etc) or mount them with an adhesive in order to hold the otolith in place while viewing.

- View otoliths against a dark background in order to see annuli more clearly. This can be done by using a dark medium or by placing mounted otoliths over a dark sheet or paper or a black otolith-viewing tray.

- Fiber optic lights should be used to view annuli from either whole or cracked otoliths.

- Age Determination

    - Age of individual fish will be determined from annuli of otoliths or scales.

    - Aging will be in whole years only.

    - All fish will have a birth date of January 1. For instance, a fish hatched in April 2002 will be considered age 0 until January 1, 2003, after which it will be considered age 1 until January 1, 2004.

APPENDIX A: IMS RESERVIOR CHARACTERISTICS

Note: "C"=canal lake, "U"=upground reservoir, and "T"=tributary reservoir

IMS Reservoirs: District 1

Name	Code	Type	Size (ha)	Size (a)
Alum Creek	80101	T	1293	3,192
Antrim Park	80119	T	16	40
Buckeye	80102	C	1153	2,847
Cenci	801122	T	4	9
Deer Creek	80103	T	522	1,290
Delaware	80104	T	384	948
Greenfield	80105	T	5	12
Griggs	80106	T	146	361
Hargus	80107	T	53	132
Hoover	80108	T	1097	2,708
Indian	80109	C	2041	5,040
Kiser	80110	T	157	387
Knox	80111	T	190	468
Kokosing	80114	T	60	149
Madison	80112	T	42	104
Mount Gilead	80113	T	4	11
Oakthorpe	80115	T	17	41
O'Shaughnessy	80116	T	342	845
Rush Creek	80118	T	111	273

IMS Reservoirs: District 2

Name	Code	Type	Size (ha)	Size (a)
Aldrich	80201	U	13	33
Amick	80204	U	22	54
Archbold #1	80205	U	8	19
Archbold #2	80206	U	18	44
Beaver Creek	80208	U	41	102
Bellevue #4	80209	U	13	31
Bellevue #5	80210	U	34	85
Bresler	80211	U	231	571
Bucyrus #1	80212	T	17	42
Bucyrus #2	80276	T	13	32
Charles Mill	80213	T	542	1,338
Clear Fork	80214	T	391	966
Delta #1	80215	U	16	39
Delta #2	80278	U	20	50
Deshler #2	80279	U	6	16
Ferguson	80218	U	124	307
Findlay #1	80219	U	72	178
Findlay #2	80220	U	255	629
Fulton	80280	U	8	20
Geirtz	802003	U	2	5
Harrison	80223	U	115	285
Killdeer #30	802006	U	2	5
Killdeer #33	802007	U	6	15
Killdeer	80226	U	103	254
Lake Le Comte	80227	U	54	133
Lamberjack	802010	U	18	45
Leipsic	80228	U	11	27
Lima	80229	U	34	85
Lost Creek	80230	U	51	127
Maumee Bay	80294	U	11	28
McComb #1	80231	U	2	6
McComb #2	80232	U	8	20
Metzger	80233	U	62	154
Monroeville	802009	U	21	51
Mosier	802004	U	36	88
Nettle	80234	T	38	94
New London	80235	U	89	220
North Baltimore #2	802012	U	12	29
Northwalk #1	80238	U	5	12
Northwalk #2	80239	U	20	50
Northwalk #3	80240	U	39	97
Olander	80281	U	9	22

Ottawa	80241	U	8	20
Outhwaite	80277	U	61	150
Oxbow	80243	T	15	36
Paulding	80245	U	26	63
Pleasant Hill	80246	T	318	784
Powers	80247	U	12	29
Raccoon Creek	80248	U	14	35
Resthaven #10	80291	T	49	121
Resthaven #11	80292	T	11	26
Resthaven #7	80289	T	28	69
Resthaven #8	80290	T	49	120
Riley	80249	U	12	30
Schoonover	80250	U	9	21
Shelby #1	80284	U	5	12
Shelby #2	80285	U	12	29
Shelby #3	80283	U	21	51
Swanton	80253	U	6	15
Upper Sandusky #1	80254	U	13	33
Upper Sandusky #2	802013	U	51	125
Van Buren	80255	T	16	40
Van Wert #1	80256	U	26	65
Van Wert #2	80257	U	26	65
Veterans Memorial	80293	U	54	133
Wauseon #1	80258	U	4	9
Wauseon #2	80259	U	20	49
Willard	80260	U	79	194

IMS Reservoirs: District 3

Name	Code	Type	Size (ha)	Size (a)
Aquilla	80301	T	11	28
Atwood	80302	T	619	1,529
Beach City	80303	T	79	196
Berlin	80305	T	1345	3,321
Clendening	80308	T	667	1,646
Dale Walborn	80309	T	264	651
Deer Creek	80310	T	130	322
East Branch	80311	T	160	394
East Res.-Portage	80330	T	84	208
Findley	80313	T	33	82
Granger	80365	T	13	33
Guilford	80315	T	133	328
Highlandtown	80316	T	74	182
Hinckley	80317	T	34	84
Jefferson	80319	T	8	19
LaDue	80357	T	561	1,384
Lake Medina	80321	T	41	100
Lake Milton	80325	T	677	1,671
Leesville Lake	80323	T	398	983
Long Lake-Portage	80334	T	90	222
Mill Creek	80324	T	43	105
Mogadore	80326	T	436	1,076
Mosquito	80327	T	2851	7,040
New Lyme	80348	T	24	60
Nimisila	80328	T	265	654
North Res.-Portage	80333	T	67	165
Petro	80370	T	2	5
Punderson	80335	T	33	82
Pymatuning	80336	T	5933	14,650
Shreve	80338	T	24	60
Silver Creek	80358	T	38	95
Sippo	80368	T	36	89
Spencer	80339	T	20	50
Springfield	80340	T	117	290
Tappan	80341	T	863	2,131
Turkeyfoot-Portage	80332	T	196	483
Wellington	80344	U	65	160
West Branch	80345	T	1073	2,650
West Res.-Portage	80331	T	43	105
Zepernick	80346	T	16	40
Zoar	80347	T	17	41

IMS Reservoirs: District 4

Name	Code	Type	Size (ha)	Size (a)
Alma	80413	T	26	65
Barnsville #1	80454	T	10	24
Barnsville #2	80455	T	4	11
Barnsville #3	80456	T	36	90
Barnsville #4	80457	T	5	13
Belmont	80401	T	46	114
Blue Rock	80403	T	6	16
Burr Oak	80404	T	254	628
Clouse	80405	T	13	33
Crooksville East	80406	T	5	13
Crooksville South	80407	T	6	14
Dillon	80408	T	568	1,403
Dow	80426	T	64	157
Forked Run	80409	T	39	97
Fox	80410	T	21	51
Jackson City	80411	T	64	157
Jackson	80412	T	102	253
Hope	80414	T	51	126
Logan	80415	T	128	317
Monroe	80436	T	15	38
New Lexington	80417	T	31	76
Piedmont	80418	T	921	2,273
Pike	80419	T	5	12
Pine	80420	T	5	12
Rio Grande	80442	T	2	6
Roosevelt	80490	T	6	15
Rose	80438	T	7	17
Ross	80421	T	20	49
Rupert	80431	T	130	322
Salt Fork	80422	T	1140	2,815
Scioto Trail	80439	T	3	7
Seneca	80423	T	1421	3,508
Snowden	80424	T	57	141
St. Clairsville	80443	T	4	10
TimbreRidge	80444	T	39	96
Turkey Creek	80435	T	17	43
Tycoon	80428	T	72	177
Vesuvius	80429	T	43	105
Veto	80430	T	59	145
White	80416	T	140	345
Wills Creek	80432	T	171	421
Wolf Run	80433	T	79	196

IMS Reservoirs: District 5

Name	Code	Type	Size (ha)	Size (a)
Acton	80501	T	239	590
Adams	80502	T	15	37
C.J. Brown	80504	T	818	2,019
Caesar Creek	80503	T	1103	2,723
Clark	80505	T	40	98
Cowan	80506	T	276	681
East Fork	80509	T	799	1,973
Eastwood	80505	T	76	188
Grand Lk. St. Mary's	80512	C	5202	12,844
Grant	80513	T	67	166
Loramie	80515	C	345	851
Paint Creek	80517	T	471	1,162
Rocky Fork	80519	T	806	1,991
Rush Run	80520	T	21	52
Stonelick	80522	T	63	155
Tawawa	80523	T	4	9

APENDIX B: EQUIPMENT CHECKLIST

Sampling Equipment

Electrofishing

- ❑ Electrofishing boat and trailer
- ❑ Dipnets (2)

Gillnetting

- ❑ Workboat and trailer
- ❑ Standard gillnets (6)
- ❑ Weights (2 per gillnet)
- ❑ Floats (2 or more per gillnet)

Trapnetting

- ❑ Workboat and trailer
- ❑ Standard trapnets (6)
- ❑ Weights (2 per trapnet)
- ❑ Floats (2 per trapnet)

Boat Preparation

- ❑ Boat battery charged
- ❑ Boat tied down properly
- ❑ Oil reservoir full
- ❑ Trailer bearings greased
- ❑ Trailer lights working
- ❑ Trailer tires properly inflated

General Data Collection

- ❑ Field data forms (all weather paper only)
- ❑ GPS unit
- ❑ Lake maps
- ❑ Pencils

Boat Equipment

- ❑ Anchor
- ❑ First aid kit
- ❑ Paddles
- ❑ Q-Beam
- ❑ Rope
- ❑ Stern light
- ❑ Tank light (tractor light)
- ❑ Throwable floatation cushion
- ❑ Tool box

Personal Equipment

- ❑ Personal flotation device (1 each)
- ❑ Personal raingear
- ❑ Watch

Fish Processing Gear

- ❑ Cooler(s) with ice
- ❑ Electric balance, tray, and batteries
- ❑ Knife for scale removal
- ❑ Labels
- ❑ Livewell dipnet
- ❑ Measuring board
- ❑ Plastic bags
- ❑ Scale envelopes
- ❑ Spring scale
- ❑ Stock tanks or tubs for livewell
- ❑ Tally devise
- ❑ Zip ties

Water Quality Sampling

- ❑ Secchi Disk
- ❑ Tape measure
- ❑ YSI meter

Miscellaneous

- ❑ Extra batteries in water-proof container
- ❑ Flashlights and/or headlamps
- ❑ Net picks (4)
- ❑ Oval tubs (for transporting dead fish)
- ❑ Rope
- ❑ Twine
- ❑ Whistle
- ❑ Wire cutters (for fish removal from gillnets)

APPENDIX C: SAMPLING FACT SHEET

Overview

The Division of Wildlife (DOW) is responsible for managing fish populations for Ohio's citizens. Management of fisheries requires population assessment and monitoring to determine the abundance, species composition, and health of fish communities. The Inland Management System allows the Fish Section to address statewide fisheries issues with current and historical fisheries information.

Why do we sample fish?

Fisheries biologists collect and analyze large amounts of information to manage fish populations. Important types of data include:

- Abundance *(i.e. how many fish are in the lake?)*

- Lengths, weights, and condition *(i.e. how healthy are the fish?)*

- Diets, food abundance *(i.e. what are fish eating and is the food supply sufficient?)*

- Age- and size-ranges *(i.e. does the population have both young and old fish?)*

- Growth rates *(i.e. how quickly are fish growing and are growth rates suitable to produce large fish?)*

- Survival rates *(i.e. how many fish live from year to year?)*

- Recruitment *(i.e. how many new fish are produced each year?)*

Most important, though, is how all of the above *change through time*. Fish populations can show large year-to-year changes in these factors, which can be collectively termed as *population dynamics*. Changing population dynamics of fish are why the DOW has to constantly monitor Ohio's lakes and streams.

How do we sample fish?

Below are the most common methods for collecting fish for analysis:

Method	Target Species	Characteristics
Electrofisher - *Creates an electric field to stun and collect fish.*	Black bass, sunfish, and juvenile hybrid-striped bass, white bass, saugeye, and walleye	▪ Most fish can be released alive ▪ Effective for fish in shallow habitats
Gillnet - *Thin mesh net hung vertically in the water to catch fish as they swim through it.*	Hybrid-striped bass, white bass, saugeye, walleye, catfish, and paddlefish	▪ Few fish can be released alive ▪ Effective at a variety of depths ▪ Effective for fish in open water
Trapnet - *Large net with sections that funnel fish into a mesh box.*	Walleye, saugeye, crappie, and muskellunge	▪ Most fish can be released alive ▪ Effective at moderate depths ▪ Effective on structure-oriented fish

What are the effects of sampling fish?

The public sometimes questions if DOW sampling negatively impacts fish populations. This is not the case. In fact, most fish die of natural causes or are taken by anglers. To illustrate this point, consider the following example:

A certain reservoir has a walleye population numbering 100,000. Typically, in any given year, about 10 – 30% (10,000 – 30,000) walleye will die of natural causes. In addition, usually between 5 – 25% (5,000 – 25,000) will be harvested by anglers. To manage this population, DOW might remove 100 – 200 walleye for examination. That is only 0.1 – 0.2% percent of the beginning population…not a bad bargain considering that the information these fish provide allows management of factors that remove 15 – 55% of the total walleye population.

To conclude, DOW fish sampling activities have a negligible impact on fish populations:

- Only a very small fraction of the fish in a given lake is ever sampled.

- Sampling times and procedures are designed to minimize fish mortality. For example, most sampling is done in spring and fall when water temperatures are low to reduce stress on fish.

- While some fish are sacrificed for certain analyses, these are an extremely low proportion of the total population.

APPENDIX D: FIELD FORMS

All IMS forms are available as MS Word documents. This includes the field forms for entering data, the backs of the field forms where variables are described, an age and growth form, and a sample labels form.

The following IMS forms are used for recording data:

- Form 1. Trip Meta-Data
- Form 2. Sample Data
- Form 3. Catch Data
- Form 4. Water Quality Data
- Form 5. Fish Collection Tally Sheet
- Form 6. Age and Growth Reporting (lab/office form)
- Form 8. Group Catch Data

The following IMS form is for printing out sample labels:

- Form 7. Sample Labels

Examples of using field forms are included in the following pages.

Form 1: Trip Meta-Data
ODNR, Division of Wildlife
Inland Management System

Form Current: 9/1/2003

Project* FIDR14	**Date*** 5/1/2003	**Location*** 80104, Delaware Reservoir

Crew IFRE _____   **Target*** Black Bass_____

IMS Sampling (circle one):   (YES)   NO

Purpose: Standard black bass population assessment_____ _____
_____
_____
_____

Comments: Water level 1.5 m below summer pool, water color very turbid due to recent rain. Crew included Ken Cunningham, Stacy Xenakis, and Chris Goings._____

Trip Meta-Data Variables

Project –   ODNR, DOW project code (ex. FIDR07)

Date –   date, in month, day, year (mm/dd/yyyy)

Location –   name of the waterbody sampled, or code number (ex. Alum Creek Lake, or 80101)

Crew -   TARS code, or descriptive code not exceeding six characters as determined by investigator (ex. WDST1)

Target –   species name, fish group name, or code for either that is targeted by the sampling effort (ex. largemouth bass or 77006; black bass general or 77995)

IMS Sampling- Is this an IMS survey or another type of data collection (YES or NO)

Purpose –   primary reason for sampling (ex. evaluate 14-inch length limit for largemouth bass)

Comments –   any point of interest related to the sampling event (ex. water elevation at 952 feet and falling; boat broke down halfway through the evening; sampling crew included Tom Hall, Marty Lundquist, and Elmer Heyob; storm passed through before sampling began)

*required by the database

Form 2: Sample Data
ODNR, Division of Wildlife
Inland Management System

Form Current: 9/1/2003   **Page __1__ of __1___**

Project* FIDR14	**Date*** 5/1/2003	**Location*** 80104, Delaware Reservoir

Etype* ___T___   **GearSpec*** 17' reservoir electrofishing boat _____

Record Temperature, Secchi, and Conductivity data for first sample of day in the boxes below:

SampNo _1_   **SurfTemp** _15_C   **Secchi** _ 83 _cm   **SurfCond** _ 320_mSiem

Samp No	Samp Site	UTM Zone	UTM East	UTM North	STime	Effort
1	A11	17	325772	4475182	21:00	15
2	A14	17	326184	4474411	21:22	15
3	B10	17	326070	4437710	21:50	15
4	B12	17	326149	4473236	22:10	15

Comments: _____

Form 3: Catch Data
ODNR, Division of Wildlife
Inland Management System

Form Current: 9/1/2003   Page __1__ of __1__

Project* FIDR14	Date* 5/1/2003	Location* 80104, Delaware Reservoir

Samp No*	Fish ID	Species	Length (mm)	Weight (g)	Samp No*	Fish ID	Species	Length (mm)	Weight (g)
1	1	77006	235	224					
1	2	77006	321	420					
1	3	77006	452	520					
1	4	77006	144	88					
2	5	77006	234	221					
2	6	77006	180	158					
3		No Fish							
4	7	77006	180	158					
4	8	77006	180	158					

*required by the database

Form 4: Water Quality Data
ODNR, Division of Wildlife
Inland Management System

Form Current: 9/1/2003   **Page __1__ of __1__**

| **Project*** FIDR14 | **Date*** 5/1/2003 | **Location*** 80104, Delaware Reservoir |

Samp No*__1__   **Samp Site __ W01 __**   **UTM Zone _ 17 _**   **UTM E ___3422422___**   **UTM N ___4469555___**

Stime* _ 21:00_   **Etype* _N_**   **Effort __ N __**   **GearSpec* _YSI 95 _**

SurfTemp _15__   **Secchi __83__**   **SurfCond _320_**   **GearID _____**

ReadDepth	Temp	DO
0	15.0	9.25
1	14.8	9.01
2	14.4	9.00
3	14.1	8.77
4	14.0	8.21

ReadDepth	Temp	DO
5	13.8	8.14
6	13.2	8.02
7	12.6	7.25

Samp No*_____   **Samp Site _____**   **UTMS Zone _____**   **UTM E _____**   **UTM N _____**

Stime* _____   **Etype* _____**   **Effort _____**   **GearSpec* _____**

SurfTemp _____   **Secchi _____**   **SurfCond _____**   **GearID _____**

ReadDepth	Temp	DO

ReadDepth	Temp	DO

required by the database

Form 5: Fish Collection Tally Sheet
ODNR, Division of Wildlife
Inland Management System

Form Current: 9/1/2003   Page __1__ of __1__

Project* FIDR14	Date* 5/1/2003	Location* 80104, Delaware Reservoir

Crew IFRE _____   **Target*** Black Bass _____

CM Class	Weight	Age/Growth
3		
4		
5		
6		
7		
8		
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34		
35		

CM Class	Weight	Age/Growth
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
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60		
61		
62		
63		
64		
65		
66		
67		
68		

Comments: _____

_____

_____

_____

Form 6: Mean Length At Age Data
ODNR, Division of Wildlife
Inland Management System

Form Current: 9/1/2003   **Page _ 1_ of _1_**

Project* FIDR14	Date* 5/1/2003	Location* 80104, Delaware Reservoir

Struc _S_   *Reader* _ Xenakis ___   *Mag* _____   *Species* Largemouth Bass

FishID	Age	FishID	Age	FishID	Age
1	2				
2	4				
3	6				
4	0				

Comments: _____

Form 8: Group Catch Data
ODNR, Division of Wildlife
Inland Management System

Form Current: 4/1/2004   **Page _1_ of _1_**

Project* FIDR14	Date* 5/26/2004	Location* Delaware Reservoir (80104)

SampNo*	GroupID	Species	Centimeter class	Total number of fish	Total weight (g) of fish
4	1	77009		72	
4	1	77011		11	
4	1	77008		4	
6	2	77009		44	
6	2	77008		12	

required by the database

D- 8

Form 7: Sample Labels for Labeling Sample Bags, Tubs and Coolers

Project: _____

Date: _____

Location: _____

SampleNo: _____

Comments: _____

_____

_____

Project: _____

Date: _____

Location: _____

SampleNo: _____

Comments: _____

_____

_____

Project: _____

Date: _____

Location: _____

SampleNo: _____

Comments: _____

_____

_____

Project: _____

Date: _____

Location: _____

SampleNo: _____

Comments: _____

_____

_____

Project: _____

Date: _____

Location: _____

SampleNo: _____

Comments: _____

_____

_____

Project: _____

Date: _____

Location: _____

SampleNo: _____

Comments: _____

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