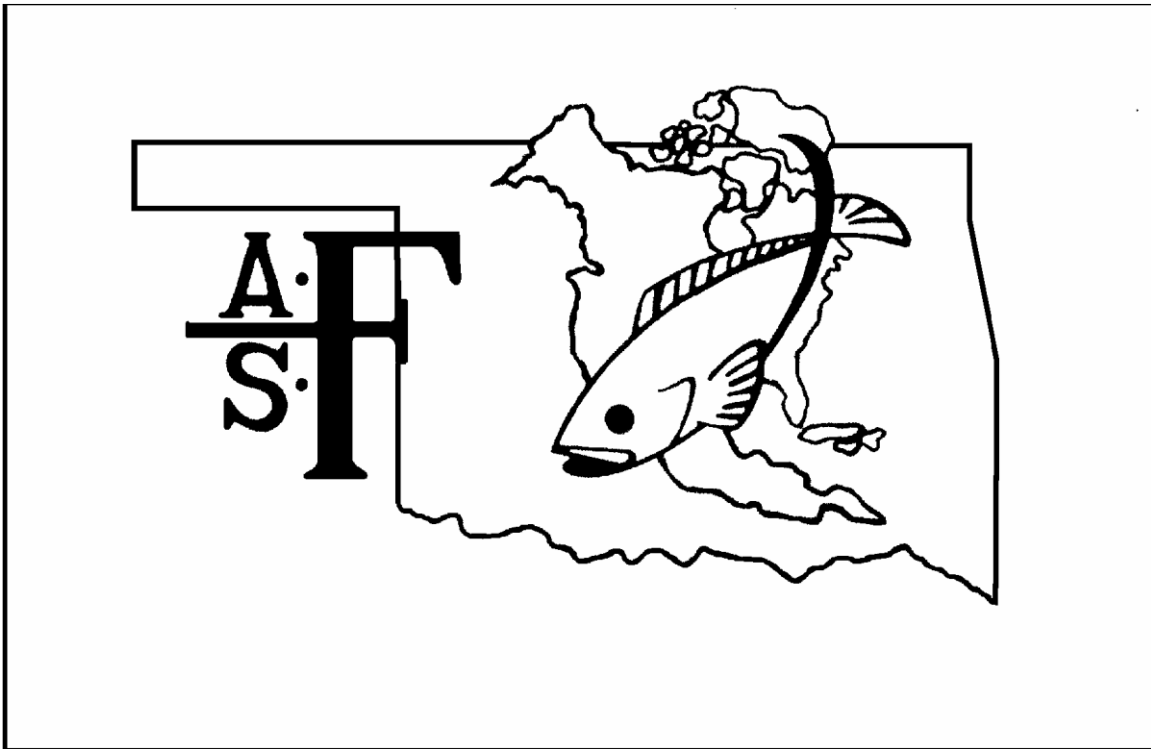


**32nd Annual Meeting
OKLAHOMA CHAPTER
of the
AMERICAN FISHERIES SOCIETY
2012**

February 8th and 9th*
(Social Evening of the 7th, see schedule)



QUALITY INN
STILLWATER, OKLAHOMA
FEBRUARY 8th and 9th

Meeting Schedule

7 February 2012

6:30 p.m. – ???

Registration & Social (beverages and snacks provided in suite located at SE corner of the pool atrium area)

8 February 2012

8:00 a.m. – 8:45 a.m.

Registration / free full breakfast for registered hotel guests

Technical Session (*Aggie Room*)

8:45 a.m. – 9:00 a.m.

Welcome -- Opening Remarks

9:00 a.m. – 9:20 a.m.

Temporal effects of a toxic algae (*Prymnesium parvum*) bloom on fish communities in a Lake Texoma (OK-TX)

Richard M. Zamor* Nathan R. Franssen, Clayton Porter,
Tim M. Patton, and K. David Hambright

9:20 a.m. – 9:40 a.m.

Predicting the distribution of endemic crayfish at multiple spatial scales

Joey Dyer*, Shannon Brewer

9:40 a.m. – 10:00 a.m.

Should We Regulate Commercial Harvest of Freshwater Turtles in Oklahoma?

Eric Johansen, Stanley Fox, David Leslie, Jr., and Tim Patton*.

10:00 a.m. – 10:20 a.m.

Monitoring Water Quality in Wister Lake and Poteau River
Don Groom*

10:20 a.m. – 10:40 a.m.

BREAK

10:40 a.m. – 11:00 a.m.

Analysis of Lee Creek's substrate using side scan sonar technology and GIS

Michael R. Gatlin* and James M. Long

11:00 a.m. – 11:20 a.m.

Poeciliid fishes as models in ecology and evolution
Michael Tobler*

11:20 a.m. – 11:40 a.m.

A 60 Year Old Trout Stream in Peril: A Case History of the Lower Illinois River Trout Stream in Northeast Oklahoma

Joshua S. Johnston* and Jim P. Burroughs

11:40 a.m. – 1:00 p.m.

Lunch (each person [including students and mentors] is responsible for their own lunch...a map of area restaurants will be available).

All student will be paired with a professional to talk with at lunch. Students and those volunteering as mentors should try to meet ahead of time to arrange a place to meet to save time. Several student-mentor pairs are still welcomed to go to lunch together as part of a larger group if desired, but we strongly encourage student-mentor interaction during lunch.

- 1:00 p.m. – 1:20 p.m. Potential for determining origin of paddlefish using otolith geochemistry
James M. Long* and Jason J. Schaffler
- 1:20 p.m. – 1:40 p.m. Monitoring Paddlefish (*Polyodon spathula*) Movement with Ultrasonic Telemetry in the Grand (Neosho) River System
Brad Johnston* and Jason Schooley
- 1:40 p.m. – 2:00 p.m. Differences in self-sustaining reservoir populations of paddlefish in Oklahoma
Ashley Nealis* and James M. Long
- 2:00 p.m. – 2:20 p.m. Managing a paddlefish population on the coattails of a single year class
Jason D. Schooley*
- 2:20 p.m. – 2:40 p.m. **BREAK**
- 2:40 p.m. – 3:00 p.m. Post-hooking mortality of blue catfish caught by jug fishing
Joseph D. Schmitt* and Daniel E. Shoup
- 3:00 p.m. – 3:20 p.m. Contribution of 178-mm channel catfish *Ictalurus punctatus* stocked in two medium-size reservoirs in Oklahoma
Randy D. Stewart* and James M. Long
- 3:20 p.m. – 3:40 p.m. ODWC Standardized Gill Net Sampling: Comparison of Old and New Standardized Nets
Ryan G. Ryswyk* and Daniel E. Shoup
- 3:40 p.m. – 4:00 p.m. **BREAK**
- 4:00 p.m. – 6:15 p.m. **Business Meeting** (*Aggie Room*)
- 6:15 p.m. – ??? **Banquet** catered by the Texas Roadhouse (*Pioneer Room*) and conclusion to silent auction
- ??? – ??? **Social** in pool atrium area

9 February 2011

- 9:00 a.m. – 12:30 p.m. **Fish health workshop** (*Aggie Room*) conducted by Lynsey Rosen, DVM and Cornelia J. Ketz-Riley, Dr.med.vet., DVM, DACZM
- 12:30 p.m. Wrap up and adjourn.

Oral Presentation Abstracts

* indicates the author presenting the talk at the meeting.

Temporal effects of a toxic algae (*Prymnesium parvum*) bloom on fish communities in a Lake Texoma (OK-TX)

Richard M. Zamor*,^{1,2,3} Nathan R. Franssen,⁴ Clayton Porter,⁵ Tim M. Patton,⁵ and K. David Hambright,^{1,2,3}

¹Program in Ecology and Evolutionary Biology, ²Department of Zoology, and ³Plankton Ecology & Limnology Laboratory, Biological Station, University of Oklahoma, Norman, OK; ⁴Department of Biological Sciences, University of Southern Mississippi, Hattiesburg, MS; ⁵Department of Biological Sciences, Southeastern Oklahoma State University, Durant, OK.

In recent years, harmful algal blooms (HABs) and aquatic invaders have received considerable attention worldwide because of their deleterious effects on aquatic ecosystems. Since 2004, the invasive, toxigenic golden algae, *Prymnesium parvum*, has consistently bloomed causing massive fish kills in Lake Texoma (OK-TX) during the winter of most years. We took advantage of these consistent blooms to monitor fish communities prior, during, and after a bloom. We surveyed small and large-bodied fish communities approximately monthly from October 2008 – October 2009 in the primary bloom site, Lebanon Pool, and in an adjacent reference site, Wilson Creek Cove. Prior to the bloom, fish communities were different in Lebanon Pool and Wilson Creek Cove. During the bloom, we caught fish in the reference site, but no fish were caught in Lebanon Pool. Following the bloom, the Lebanon Pool community recovered and both communities were similar in composition. This recovery was likely the result of immigration by fish during a large flood event in May 2009, suggesting that fish communities can recover from fish kills caused by *P. parvum* through immigration from neighboring communities. Lake-wide effects are likely more important than local effects in structuring fish communities in Lake Texoma, evidenced by the similarity of fish communities after recovery from the bloom. To date, the *P. parvum*-induced fish kills in Lake Texoma are localized in backwater and nearshore areas. However, in cases in which fish kills are lake-wide, the quality of sources for immigrants after *P. parvum* blooms may limit fish community recovery.

Predicting the distribution of endemic crayfish at multiple spatial scales

Joey Dyer*, Shannon Brewer

Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University, 007 Agriculture Hall, Stillwater, Oklahoma 74078

Endemic species are a high priority to the conservation of stream biota because they occupy specific and limited ecoregions. Crayfish are particularly important because they are keystone species and a valuable food source for many fishes, including sportfish. *Orconectes menae* and *O. leptogonopodus* are endemics of the Ouachita Mountains and appear to be identical with the exception of gonopod morphology. The objective of this study was to predict the distribution of *O. menae* and *O. leptogonopodus* at multiple spatial scales in Oklahoma. Occurrence data of the two species were combined with environmental parameters to predict the likely distribution of these species outside sampled locations using Maxent models. Receiver operating characteristics (ROC) graphs indicated our models were highly accurate. Jackknifing tests indicated the largest contribution to the *O. menae* and *O. leptogonopodus* model related to three variables: precipitation in the hottest quarter, elevation, and flow accumulation. Both species were more likely to occur in intermittent streams (90% of the time). General linear models indicated *O. menae* and *O. leptogonopodus* made general use of particular channel units, regardless of stream sampled. However, in nearly half of the intermittent streams sampled, both species were found beneath the bed surface, even though surface water was still available in nearby habitat patches. Future efforts will field validate our models and address movements and habitat use of these species during drying periods.

Should We Regulate Commercial Harvest of Freshwater Turtles in Oklahoma?

Eric Johansen¹, Stanley Fox¹, David Leslie, Jr.², and Tim Patton^{3*}.

¹Department of Zoology, Oklahoma State University, Stillwater, OK, ²Oklahoma Cooperative Fisheries and Wildlife Research Unit, Oklahoma State University, Stillwater, OK, ³Department of Biological Sciences, Southeastern Oklahoma State University

Turtles are among the world's most endangered vertebrates, with approximately 50% of the more than 300 species meeting various criteria to be classified as threatened, endangered, or of special concern. Declines in Oklahoma have been described, but need to be further elucidated. Aquatic turtles

generally exhibit a type III survivorship curve and are slow to reach sexual maturity, making overexploitation especially problematic, and conservation especially challenging. In Oklahoma, many species of freshwater turtles have been subject to commercial harvest, most of which ostensibly goes towards supplying Asian food markets. As a result of public and agency concern, a three-year moratorium was placed on commercial harvest in 2008, and a two-year extension was granted in 2011. During this moratorium, we are investigating the potential impact of commercial harvest by assessing potential changes in population parameters. Our objectives are to (1) compare current populations to those described in a survey in the 1990's, (2) compare current populations in sites subject to harvest to those in sites not subject to harvest, and (3) simulate harvest impacts by experimental removals of turtles from controlled sites. In this presentation, we address the first of these objectives, and provide discussion on the need for, and development of, meaningful harvest regulations.

Monitoring Water Quality in Wister Lake and Poteau River

Don Groom*

Oklahoma Department of Wildlife, 6733 SW HWY 1 Wilburton, Oklahoma

Wister Lake is located in LeFlore County, Oklahoma. Dam construction was completed in May 1949 impounding the Poteau River and Fourche Maline Creek. The project was authorized for flood control, water supply, low flow augmentation, water conservation and sedimentation. Since its construction, the conservation pool has been raised on three occasions. These increases flooded a large shallow area resulting in negative impacts to the lake's water quality. The cost of treating water and water demand has influenced various projects to stabilize shoreline and/or improve water quality. The proposal to install a siphon in the lake to discharge anoxic water from the hypolimnion and installation of a water intake pipe below the tailrace has caused concern regarding water quality in the Poteau River below Wister, specifically as it pertains to two freshwater mussel sanctuaries that exist approximately 12.87 kilometers downstream. In order to gain a better understanding of how water quality is affected in-lake and downstream by current operations, we deployed two YSI Model 6920-40 Sondes to collect conductivity, temperature, pH and dissolved oxygen. A sonde was placed in the lake and approximately 0.10 kilometers downstream from the dam. Data was logged every 30 minutes for one year. Sampled parameters were compared to inflow and release data to examine any relationships and give insight to possible impacts of future operations.

Analysis of Lee Creek's substrate using side scan sonar technology and GIS

Michael R. Gatlin* and James M. Long

Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University, 007 Agriculture Hall, Stillwater, Oklahoma 74078

The ability to classify and quantify stream substrates is often a necessity when conducting biologic investigations in lotic ecosystems. However, traditional survey methods often require exorbitant amounts of time and money for substrate classification. We surveyed underwater habitat along the entirety of Oklahoma's Lee Creek using a Humminbird© 998c SideScan sonar when stream discharge was between 145 and 362 ft³/sec during the summer of 2011. All habitats that were unable to be sampled with the sonar unit, including channel geomorphic units, were assessed visually. The majority of Lee Creek was comprised of slow moving water (79%) with pools making up 71.4% of its total length while fast water units made up less than 21%. Side scan sonar surveys yielded 409 individual habitat areas, consisting of 5 distinct substrate classes, and totaling 109 ha² in area. Lee Creek's substrate is mostly rocky or rocky boulder (91%). A groundtruthing survey on approximately 30% of classified substrates yielded an overall map accuracy of 64%. Side scan sonar imagery produced only moderate agreement with field data; however, it was significantly better than random (KHAT=0.43). Overall map accuracy may improve with better image conversion techniques such that the original resolution is maintained. We conclude that side scan sonar provides an efficient means of underwater habitat classification on navigable stream systems.

Poeciliid fishes as models in ecology and evolution

Michael Tobler*

Department of Zoology, Oklahoma State University, Stillwater, OK 74074

Due to their size and abundance, poeciliid fishes are ideal models in ecology and evolution research. I will review some recent projects from our lab on fish living in among the most extreme environments inhabited by vertebrates: sulfidic caves and springs. These habitats contain high concentrations of toxic hydrogen

sulfide lethal to most organisms. Fish inhabiting these environments have adapted to a diverse set of selective pressures, including the presence of a toxicant, severe hypoxia, different resource availability, and the presence of different predators. I will particularly discuss our findings in the context of conservation.

A 60 Year Old Trout Stream in Peril: A Case History of the Lower Illinois River Trout Stream in Northeast Oklahoma

Johnston, Joshua S.* and Jim P. Burroughs

Oklahoma Department of Wildlife Conservation, 9097 N. 34th St. W., Porter, OK 74454

Tenkiller Ferry Reservoir is a 12,900 acre Corps of Engineers reservoir on the Illinois River in Sequoyah County, Oklahoma. The dam was completed in 1952 and the project began hydropower production in 1953. Rainbow trout *Oncorhynchus mykiss* were first stocked in 1952, and were established as the primary mitigation for the loss of the warm water fishery in the last 8 miles of the Illinois River below the dam. The Lower Illinois River became a year-round trout fishery in 1965. It is one of only two year-round trout fisheries in Oklahoma. Studies conducted both prior to the final construction of the dam, and many years since recommend a minimum flow ranging from 50 cfs to 125 cfs to support trout and the downstream aquatic community. No minimum flow or storage of water has been allocated to the trout stream. The water in Tenkiller Ferry Reservoir is now over 100 percent allocated, mainly to power companies and local municipalities. The fishery has historically survived on dam leakage and more recently a temporary donation of water rights from a local industry. In 2010, The Corps of Engineers began a dam maintenance project that has stopped the majority of the leakage. The diminished volume of water results in frequent violations of state water quality standards, and during the warmer months, water temperatures reach levels lethal to rainbow trout. Trout stockings were recently suspended for only the second time in 60 years as a result of insufficient water quantity and extremely low dissolved oxygen. Local businesses and landowners are concerned about reduced business revenue and a decline in property value. Both state and federal legislators are becoming involved to try to find a solution to the problem.

Potential for determining origin of paddlefish using otolith geochemistry

James M. Long^{1*} and Jason J. Schaffler²

¹U.S. Geological Survey, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University, Stillwater, Oklahoma 74078; ²Center for Quantitative Fisheries Ecology - Old Dominion University, 800 W. 46th St., Norfolk, VA 23508

Understanding the origin of paddlefish can greatly enhance management of this species as it helps determine important spatial associations. Otolith geochemistry has been used successfully for many species where differences exist in water chemistry among water bodies, chemical constituents locked in the otoliths of fish in those water bodies can be measured and compared for differences. We conducted an analysis of paddlefish otoliths from three water bodies in different ecoregions and river basins: Keystone Reservoir (Cross Timbers ecoregion of the Arkansas River basin; $n = 8$), Grand Lake O' the Cherokees (Ozark Highlands and Central Irregular Plains ecoregions of the Neosho River basin; $n = 9$), and Tishomingo National Fish Hatchery (Cross Timbers ecoregion of the Red River basin; $n = 5$) to determine if sufficient differences in otolith geochemistry existed to identify the populations. We analyzed otoliths for 10 elements and found differences in Mg, Mn, Rb, Sr, Y, and Ba among populations in at least one system. Based on non-metric multidimensional scaling ordination plots, the first axis completely separated paddlefish in the Red River basin from northern paddlefish stocks and the second axis separated paddlefish in Grand Lake from paddlefish in Keystone Reservoir. These results demonstrate the potential for otolith geochemistry to identify origin of paddlefish among large river basins in Oklahoma. Additional structure within reservoirs may occur, but further research is needed to determine its potential.

Differences in self-sustaining reservoir populations of paddlefish in Oklahoma

Ashley Nealis* and James M. Long

Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University, 007 Agriculture Hall, Stillwater, Oklahoma 74078

Oklahoma has several self-sustaining populations of paddlefish (*Polyodon spathula*) that support sport fisheries. The most important of these is in Grand Lake O' The Cherokees (Grand Lake). The Oklahoma Department of Wildlife Conservation (ODWC) established the Paddlefish Research and Processing Center (RPC) on Grand Lake in 2008. This installation increased communication with paddlefish anglers who

complained of decreased fish size on Grand Lake. Simultaneously, population monitoring on Keystone Reservoir (Keystone) showed that paddlefish there tended to be larger than from Grand Lake. Our objectives for this study were to: 1) estimate and compare characteristics of these two paddlefish populations, and 2) determine differences in primary productivity, zooplankton structure, and fishing pressure between reservoirs. Paddlefish gillnetting data from winter 2010 showed no significant difference in relative abundance between the populations however, differences in fish size were observed. Mean lengths for both male and female fish from Keystone were longer than those from Grand Lake. Post-season paddlefish angler surveys indicated that in 2010 58% of respondents fished for paddlefish in Grand Lake, while 9% fished in Keystone. Age, growth, and mortality are being evaluated, as are differences in reservoir productivity and zooplankton structure.

Managing a paddlefish population on the coattails of a single year class

Jason D. Schooley*

Oklahoma Department of Wildlife Conservation, 300 Aquarium Drive Jenks, OK 74037-9998

What would it take for population of large-bodied, slow-to-mature fish to suddenly explode in numbers and reach carrying capacity in a 46,500 surface-acre reservoir? Years of physiological, ecological, and demographic evidence on the American paddlefish *Polyodon spathula* in Grand Lake O' the Cherokees, Oklahoma supports this unlikely scenario as a result of an extreme recruitment event in 1999. An overwhelming majority (75%) of adult specimens aged during the period 2004-2011 via dentary bone annuli were spawned in 1999. Abundance estimates pre-1999 typically totaled 25,000 individuals, yet post-1999 estimates revealed a major population explosion (to near 200,000 individuals). Hydrological analyses reveal not only unique variables that may have contributed to spawning success in 1999, but also major similarities in hydrology between 1999 and other years having unimpressive recruitment success. The population supports a national fishery and most management efforts revolve around a state-run roe-donation program which has grown in popularity and resulted in increased annual harvest. Oklahoma Department of Wildlife Conservation finds itself in a paradoxical scenario where caviar from a declining population funds research in addition to supplementing the general budget.

Post-hooking mortality of blue catfish caught by jug fishing

Joseph D. Schmitt* and Daniel E. Shoup

Department of Natural Resource Ecology & Management, Oklahoma State University, Stillwater, OK 74078

Growth of blue catfish in Oklahoma reservoirs is typically slow, with only a small percentage of fish reaching preferred size (762 mm). To prevent overharvest of larger fish, the Oklahoma Department of Wildlife Conservation recently implemented a law restricting harvest to one fish per person per day over preferred size. For this regulation to be effective, released fish must survive to further contribute to the population, but little is known concerning the delayed hooking mortality of blue catfish. We investigated the delayed hooking mortality for blue catfish caught on juglines. Blue catfish (N=545) were caught seasonally from three reservoirs on either 6/0 circle hooks or J hooks fished for 24h sets. One experimental fish (jug fished) and one control fish (captured via pulsed DC electrofishing) were then placed in field enclosures and monitored for mortality after 72 hrs. Overall mortality was low at 7.15%. Mortality was greatest at water temperatures greater than 15° C (9.56%). At lower temperatures, mortality decreases to 1.61%. Hook type did not significantly affect mortality, nor did the depth in the water column where the fish was hooked. The probability of mortality decreased with increased fish total length. These results suggest that the new regulation limiting the harvest of preferred-size fish should be effective, even when fish are harvested with 24-h jug fishing sets.

Contribution of 178-mm channel catfish *Ictalurus punctatus* stocked in two medium-size reservoirs in Oklahoma

Randy D. Stewart* and James M. Long

Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University, 007 Agriculture Hall, Stillwater, Oklahoma 74078

Many stocking programs rear fry to advanced sizes to improve fisheries. In Oklahoma, channel catfish *Ictalurus punctatus* are reared to 178-mm before stocking in medium-sized reservoirs to increase the proportion of catchable-size fish. To evaluate the contribution of stocked fish to the current population, we marked, stocked, and monitored the contribution of channel catfish in two reservoirs for one year. Channel

cattfish fingerlings (~115 mm TL) were immersed in a 700 mg/ L oxytetracycline solution for six hours, reared in earthen ponds for 30 d, assessed for mark verification, and stocked at 178-mm TL size in September 2010. Fish were sampled from each reservoir monthly from May-August 2011 using baited hoop-nets at 16 randomly selected sites. All fish were measured, weighed, and lapilli otoliths were removed from two hundred randomly collected fish measuring less than 325 mm for mark assessment. Lake Lone Chimney had higher catch rates of fish ($C/f = 56$) but lower contribution of stocked fish ($C = 26\%$) than Lake Greenleaf ($C/f = 21$; $C = 98\%$). Follow-up research regarding the factors related to these contribution differences between reservoirs would aid fisheries managers when deciding which reservoirs to stock.

ODWC Standardized Gill Net Sampling: Comparison of Old and New Standardized Nets.

Ryan G. Ryswyk^{1*} and Daniel E. Shoup²

Oklahoma Department of Wildlife Conservation 19333 State Hwy. 49 Lawton, OK 73507; ² Department of Natural Resource Ecology & Management, Oklahoma State University, Stillwater, OK 74078

The ODWC recently switched from a 200-ft long gill net configuration (long net) to the current nationally standardized net configuration suggested by Miranda and Boxrucker (2009) consisting of 80-ft long (short net) by 6 feet deep nets composed of 10-foot long panels with bar mesh sizes of $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, and $2\frac{1}{2}$ inches. We fished the two net types together at 8 lakes, both at fixed and random sites, to determine differences in catch rates and length frequencies of hybrid striped bass, white bass, walleye, saugeye, white crappie, and channel catfish. Catch rates of long and short nets were similar except for channel catfish and white crappie, which were significantly lower in the short nets. Variability was similar between nets for all target species except hybrid striped bass, which had higher variability in the short nets. Catch rates of the two nets were highly correlated, explaining 66-86% of the variability between catch rates of the two net types, for all target species except white bass. Length frequencies of short nets were similar to long nets once the influence of the "shad mesh" ($\frac{1}{2}$ and $\frac{5}{8}$ inch) was accounted for in the long nets. Catch rates at fixed and random sites were similar for the short nets, except for white bass. Variability at random sites was slightly higher than fixed sites, except for saugeye and walleye. Switching to the new nationally standardized gill net should not have any negative impacts to the ODWC standardized sampling procedures.