

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

CHEQUAMEGON BAY FALL SURVEY REPORT 2024

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INTRODUCTION

Chequamegon Bay is a 34,000-acre, shallow (mean depth of 28 feet) embayment on Wisconsin's south shore of Lake Superior (Figure 1). It is a productive, nearshore area of the lake that supports a diverse assemblage of fishes and serves as a restricted-use area from high-efficiency commercial gears. The Chequamegon Bay Fall Survey was developed to provide an index of relative abundance for important recreational coolwater species (walleye, yellow perch, northern pike and smallmouth bass) using a gear that is effective at capturing representative amounts of nearshore target species during a season that is not biased by spawning dynamics. The use of gill nets in Chequamegon Bay also provides better spatial coverage of the study area relative to other types of sampling gears.

METHODS

From 2019 to 2024, walleye and yellow perch were targeted with graded-mesh, monofilament gill nets (400-foot gangs composed of 50-foot nets constructed with 1.5 to 5.0-inch mesh by 0.5-inch increments). Gill nets were fished for one night (24 hours) in six fixed locations (Figure 1) using the R/V Hack Noyes during the beginning of October.

All target species were measured (nearest 0.1 inches), weighed (when possible; nearest gram) and tagged with a uniquely numbered Floy tag on the left side of the dorsal fin. Tag data were recorded for all recaptured fish. Non-target species were also measured or counted depending on the total number and time constraints. Sagittal otoliths were sampled from all deceased individuals of each target species. External marks or diseases (e.g., sea lamprey wound, etc.) were noted. Relative abundance (mean catch-per-unit-effort [CPE]) was calculated as number of fish per km of gill net (stations as replicates).

RESULTS AND DISCUSSION

Seventeen fish species were detected during the 2024 survey (Figure 1). The mean CPE of northern pike was relatively stable besides 2023, which was likely a sampling bias (Figure 2). White perch relative abundance has increased substantially since 2019, and white perch currently have a wider distribution of sizes compared to the beginning of this survey (Figure 5). White sucker relative abundance has generally increased since 2019. Yellow perch relative abundance increased from a low in 2019 to a high in 2021 as several young fish recruited to the survey. After 2021, yellow perch relative abundance has decreased slightly with an

associated increase in the size of fish captured. Lake whitefish and smallmouth bass catches in this survey have been highly variable and likely dependent on environmental conditions.

Total walleye relative abundance was highest in 2020, driven by a high abundance of smaller fish, but total walleye relative abundance has overall been stable over the six years of the survey (Figure 3). Relative abundance of smaller, sublegal (< 15 inches) has been stable over the past four years (Figure 3). Relative abundance of larger walleye (> 20 inches) has been relatively high the past two years of the survey.

Median length of lake whitefish in this survey was 20.4 inches with most fish sampled between 16 and 25 inches (Figure 4). Median length of northern pike in this survey was 24.8 inches with most fish sampled between 18 and 35 inches. Median length of smallmouth bass in this survey was 17.4 inches with most fish sampled between 15 and 19 inches. Median length of walleye in this survey was 17.9 inches. Most sizes of walleye were vulnerable to capture in this survey, which represented fish from 7 to 26 inches. Median length of white perch in this survey was 8.8 inches with most fish between 6 and 12 inches. Median length of yellow perch in this survey was 6.9 inches with most fish between 6 and 11 inches.

Northern pike and smallmouth bass median length was similar among the years of this survey (Figure 5). Walleye median length increased from 2020 to 2024. White perch and yellow perch median length increased from 2020 to 2022 before stabilizing in 2023 and 2024.



Figure 1. Map of the six standard gill net stations in the Chequamegon Bay Fall Survey (left) and list of the species detected in the 2024 gill net survey (right).

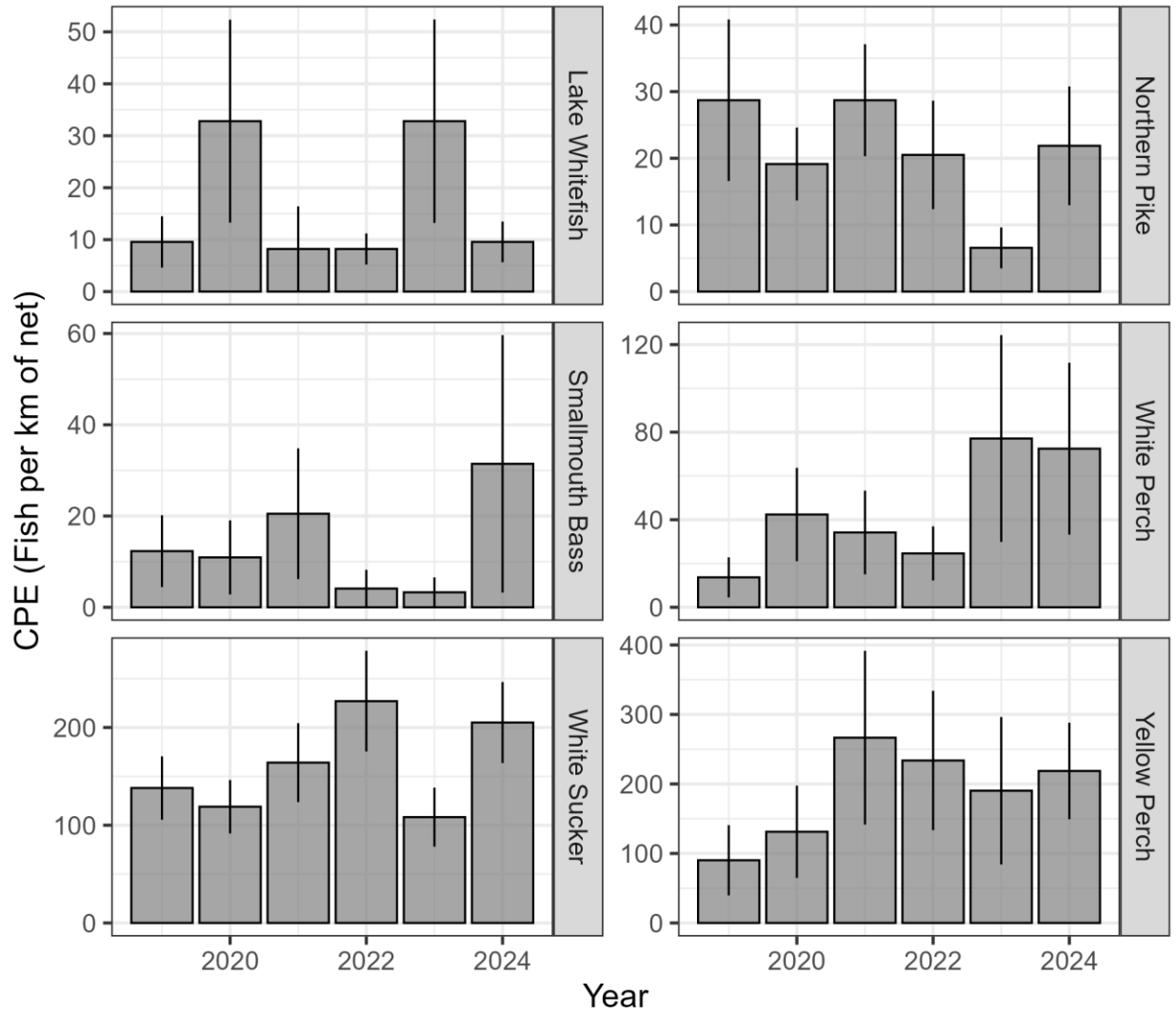


Figure 2. Mean catch-per-unit-effort (CPE) of six of the primary species captured in the Chequamegon Bay Fall Survey from 2019 to 2024.

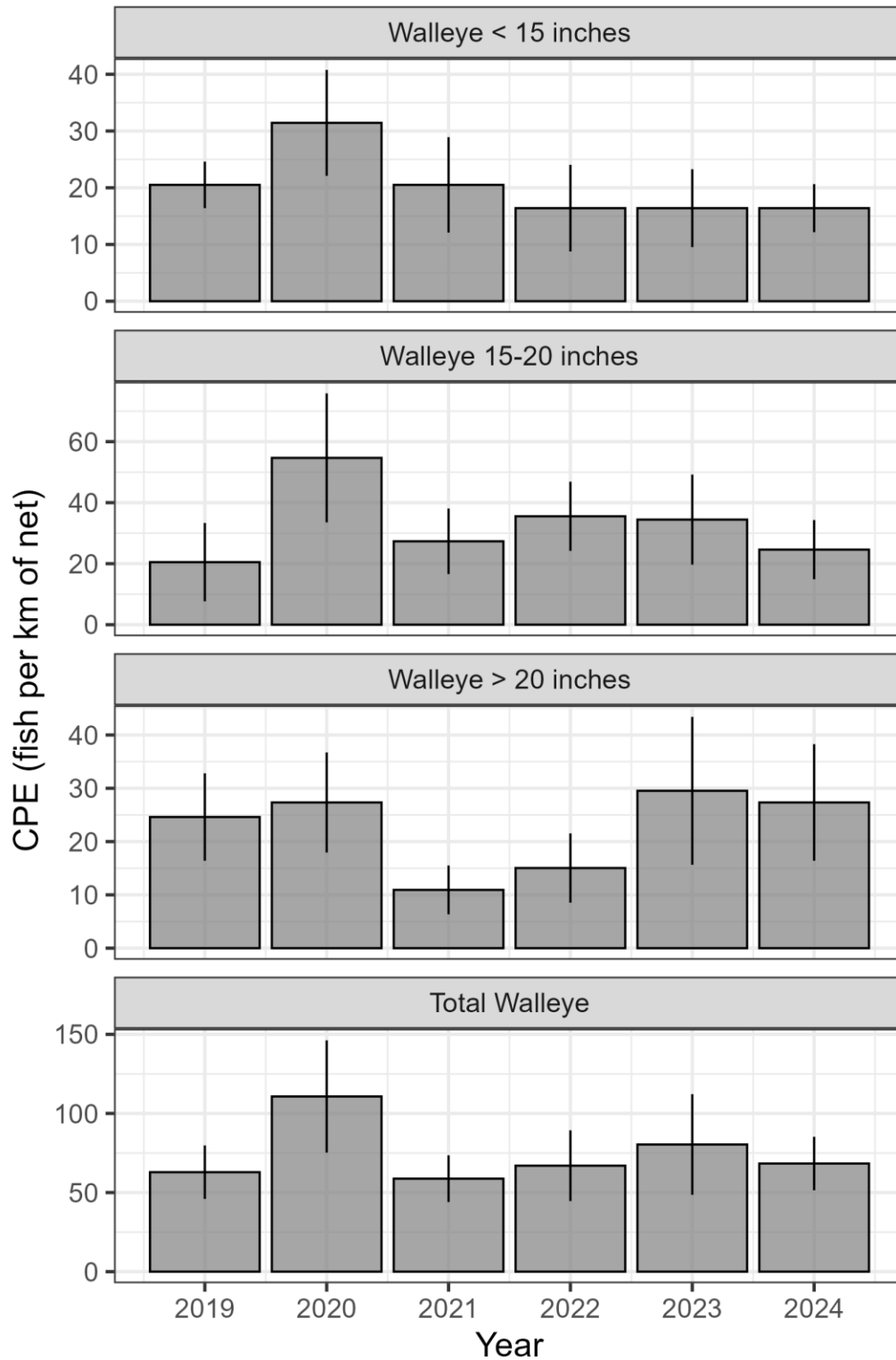


Figure 3. Mean catch-per-unit-effort (CPE) of walleye less than 15 inches, walleye 15-20 inches, walleye greater than 20 inches, and total walleye catch in the Chequamegon Bay Fall Survey from 2019 to 2024.

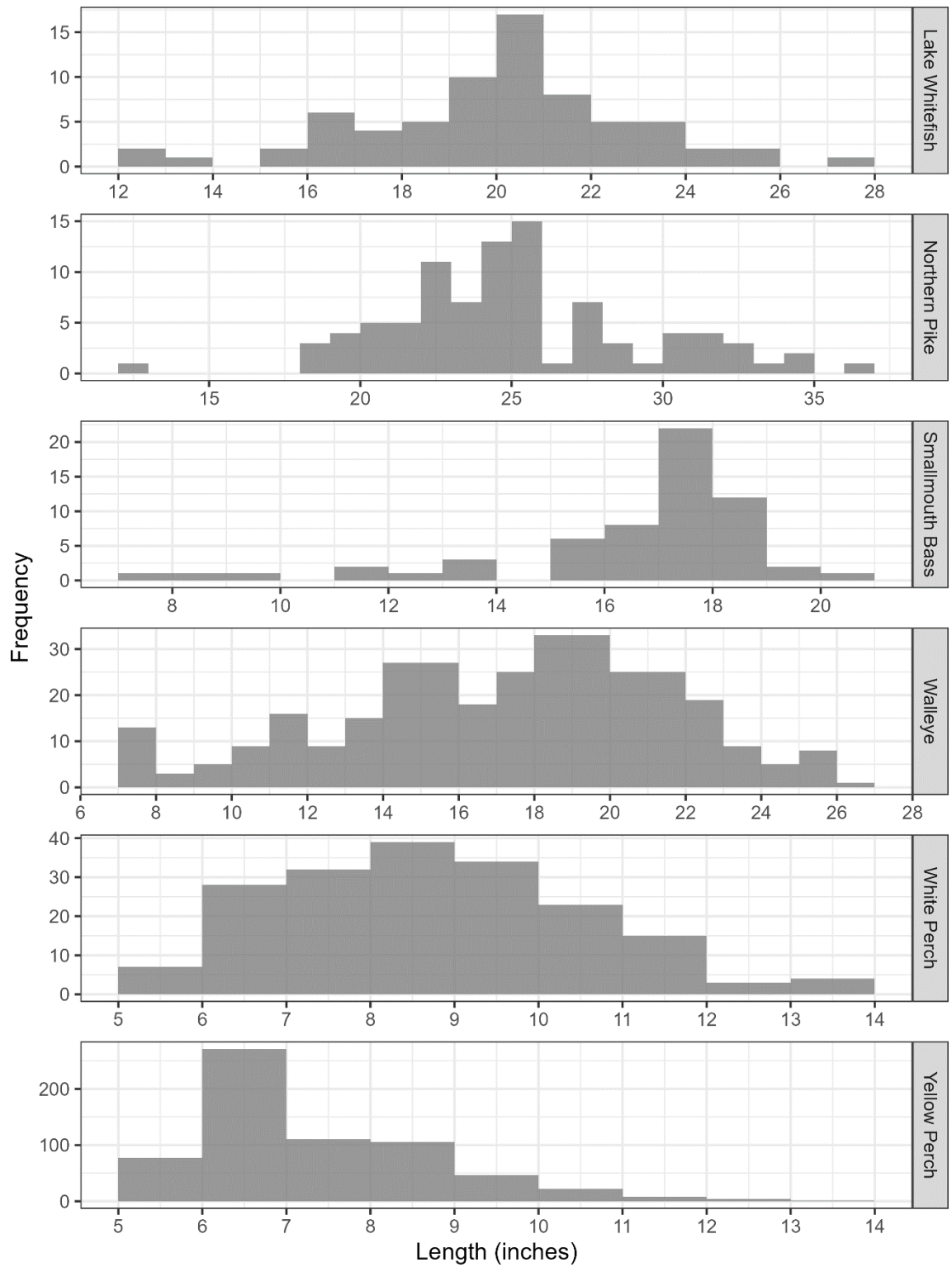


Figure 4. Combined length frequency of primary species captured in the Chequamegon Bay Fall Survey, 2019 to 2024.

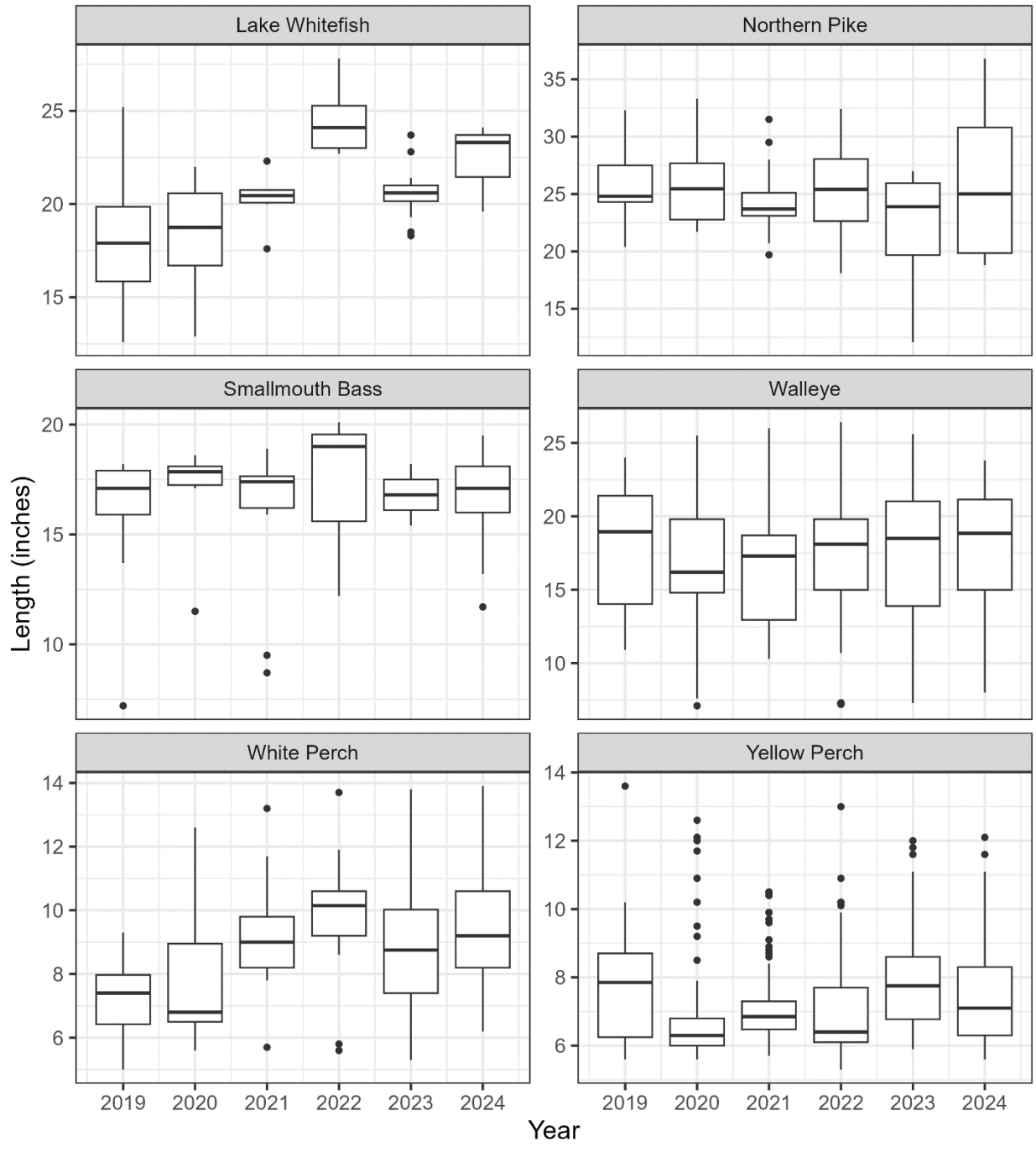


Figure 5. Annual length distribution of primary species captured in the Chequamegon Bay Fall Survey from 2019 to 2024.