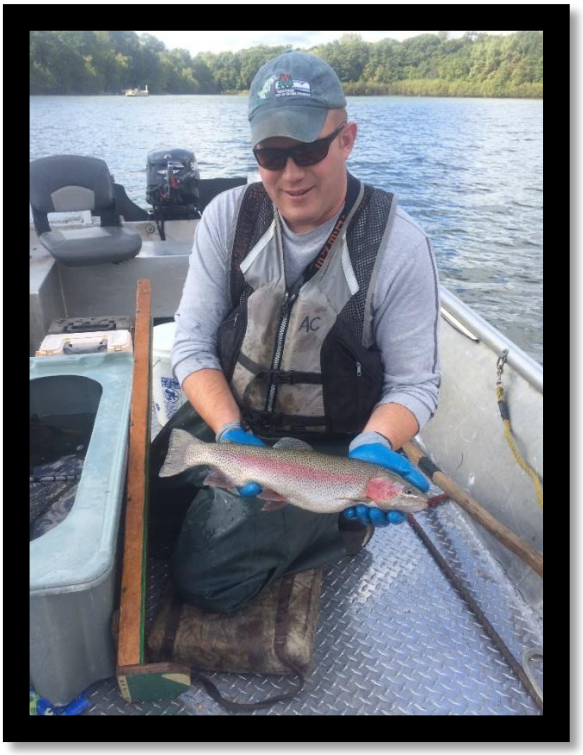
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Creel Survey Report For Put-And-Take Trout Lakes

Barron And Polk Counties, Wisconsin 2023



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Introduction

The Wisconsin Department of Natural Resources (DNR) stocks catchable-sized trout into small lakes to create put-and-take fishing opportunities. Stocked trout generally exceed 8 inches in length and are stocked prior to the Wisconsin fishing opener and in the fall depending on the stocked product. Yearling trout are stocked in the spring and adult brood stock are stocked in the fall to create put-and-take fisheries that are typically managed with low minimum length limits and generous daily bag limits. Domesticated strains of brook trout, brown trout and rainbow trout are commonly stocked due to their ease of rearing in hatcheries and catching by anglers. Consistent stocking is necessary to maintain these fisheries, and the costs associated with raising and stocking fish is expensive. Therefore, ensuring anglers use these fisheries is important so that future decision-making can optimize resources to maximize angler use and opportunities.

Lake systems in Barron and Polk counties managed for trout are small lakes (Table 1). Candidate lakes for put-and-take trout fisheries do not typically support year-round survival of trout. A few lakes are susceptible to fish kills (either winterkills or unsuitable summer oxy-thermal conditions). Following a winterkill event, spring stocking of trout into systems nearly void of competitor fishes with high forage availability aims to improve survival and growth rates. Summer oxy-thermal conditions can also be sub-optimal and/or lethal to stocked trout. As a result, when summer conditions are thought to be unfavorable to the survival of spring stocked yearling trout, some systems are supplemented with adult brood stock in the fall. This two-fold stocking strategy provides consistent fishing opportunities during the spring, fall and early winter. Creating and maintaining artificial trout fisheries provides additional public fishing opportunities across the landscape and directs effort to systems that otherwise would be nearly void of fishing pressure. These fishing opportunities are popular and thought to receive high fishing pressure. However, these put-and-take fisheries typically receive less management and monitoring attention than other area fisheries. Thus, the extent of angler use, catch and harvest was largely unknown.

Table 1. Lake characteristics for put-and-take trout lakes in Barron and Polk counties, WI. Depths are recorded in feet.

	ICE HOUSE LAKE	LITTLE GRANITE LAKE	RAINBOW LAKE	PICKEREL LAKE	LOWER PINE LAKE	OSCEOLA MILLPOND
County	Polk	Barron	Polk	Polk	Polk	Polk
Size (acre)	6	23	8	15	96	0.5
Max depth	35	52	17	43	102	5
Mean depth	14	22	-	15	-	-
Winterkill Risk	Yes	No	Yes	Yes	No	No

Summer Kill Risk	Yes	Yes	No	No	No	No

These put-and-take trout lakes have been stocked since the early 1970s with primarily domesticated strains of brown trout and rainbow trout of various sizes and stocking rates (Appendix Table 1; Table 2). The DNR stocked catchable-sized trout in Little Granite Lake, Osceola Millpond, Pickerel Lake, Rainbow Lake and Ice House Lake before opening day (the first Saturday in May) of the regular trout season 2023 (Appendix Table 1). Adult brood stock were stocked in Little Granite Lake, Lower Pine Lake, Pickerel Lake and Rainbow Lake during fall 2023.

Table 2. Annual stocking rates of yearling and brood stock trout for each put-and-take trout lake in Barron and Polk counties.

		STOCKING RATE	
LAKE	SPECIES	YEARLING	BROOD STOCK
Little Granite Lake	rainbow trout	75/acre	3/acre
Osceola Millpond	rainbow trout	50/acre	-
Lower Pine Lake	brown trout	-	1/acre
Pickerel Lake	rainbow trout	100/acre	2/acre
Ice House Lake	rainbow trout	150/acre	-
Rainbow Lake	brown trout	100/acre	3/acre

A passive creel survey using stationary kiosk stations was conducted during the 2023 open trout fishing season. The goal was to characterize angler effort, catch and harvest of each fishery to prioritize the importance of each put-and-take trout lake and guide future stocking efforts.

Methods

Creel kiosk stations were deployed at fixed locations near lake access points with the goal of intercepting as many anglers as possible. Kiosks were deployed at Ice House Lake, Little Granite Lake, Pickerel Lake, Rainbow Lake, Lower Pine Lake and the Osceola Millpond one week prior to the inland trout fishing opener. Creel cards were available to anglers in a mailbox at the top of each kiosk and completed questionnaires were placed into the bottom locked drop box. Six questions were asked to target information regarding angler effort (daily and seasonal), anglers' proximity to home (proxy for willingness to travel), angler catch and harvest (Figure 1). Kiosks were checked periodically to replace creel cards and were removed Oct. 25, 2023.

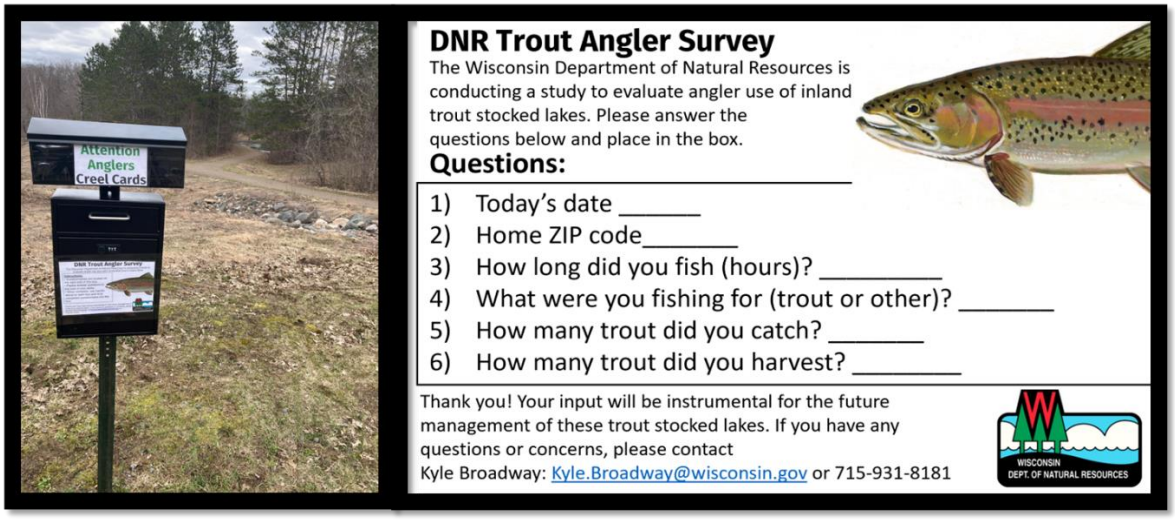

Figure 1. Kiosk setup at lake access points on the left and creel survey questionnaire on the right.

Two of the six lakes were removed from further analysis due to insufficient data. Creel data was not collected at the Osceola Millpond as the kiosk was removed by the Village of Osceola prior to the trout fishing opener and was not redeployed. Lower Pine Lake was also removed from this analysis as only two creel cards were completed, one of which targeted trout. Little Granite Lake, Pickerel Lake, Rainbow Lake and Ice House Lake were included for additional analysis. Creel questionnaire responses that indicated a target species other than trout (e.g., "other" or "largemouth bass") were excluded from further analysis (n = 3), but responses that indicated "anything" were included (n = 2).

Metrics characterizing angler use, catch and harvest were calculated using angler responses to creel questions. Each creel questionnaire was assumed to be completed by a single angler unless the number of trout harvested exceeded a single person's daily limit (5 trout per day per angler; 6 instances this occurred) or was otherwise specified on the creel card (1 instance this occurred). Fishing effort is multifaceted and was characterized using multiple metrics including the total number of angler visits and angler hours, angler hours/acre of surface water, mean fishing trip hours, mean distance traveled to fish and the number of out of state anglers. A principal components analysis was used to graphically visualize the relative importance of effort metrics among lakes.

Multiple metrics were calculated to characterize angler success including mean catch and harvest per effort and catch and harvest per acre of surface water. What quantifies "success" often varies among anglers. Thus both catch and harvest metrics were characterized to satisfy both harvest-orientated and catch-and-release perspectives. Passive creel surveys typically sample a subset of anglers due to nonreporting or because some anglers simply do not intercept the kiosk. An analysis

of combined camera and kiosk estimates from three northeastern Wisconsin inland trout stocked lakes (Little Cub Lake, Logger Lake and Sand Lake; Florence and Forest counties) during 2022 showed that on average it took 9.07 anglers to complete a single creel questionnaire (Gregory Matzke; Wisconsin DNR; personal communication). We estimated total catch and harvest using a nonreporting rate of 9.07 anglers to 1 completed questionnaire. The percentage of stocked trout caught and the exploitation rate were calculated by dividing the estimated total number of trout caught and harvested, respectively, by the number of spring yearlings stocked. Brood stock trout stocked during early October were not included in the exploitation calculation due to the timing of kiosk removal (late October), low number of questionnaires completed and few trout caught and harvested during October. It is suspected some angling effort targeting brood stock trout occurs during early winter in Little Granite Lake, Pickerel Lake and Rainbow Lake, but this was beyond the scope of this report. A principal components analysis was used to graphically visualize the relative importance of catch and harvest metrics among lakes.

A mean rank analysis was performed to guide future stocking efforts following the assumption that priority lakes should have the highest angler effort, catch and exploitation. All previously mentioned angler effort, catch and harvest metrics were included as analysis criteria with equal weighting (Appendix Tables 2 and 3). Discrete values within each criterion were scored 1 – 4 from lowest to highest. Ties were assigned the same lowest possible score. For example, if two lakes tied on the low end of a criterion, then a score of 1 would be assigned to each lake whereas scores of 3 and 4 would be assigned to the other lakes. Criterion assigned mean values were evaluated using a Kruskal-Wallace test followed by a Dunn's Test with Holm's Sequential Bonferroni adjustments for multiple comparisons and scored 1 – 4 from lowest to highest if differences occurred. Criterion with non-significant differences were assigned the same lowest possible score. Scores were averaged across all criteria for each lake and a stocking priority rank was assigned highest to lowest following Kruskal-Wallace and Dunn's tests with Holm's Sequential Bonferroni adjustments.

Results

Eighty-four creel questionnaires were completed by trout anglers over the duration of the creel survey. Three questionnaires (3.5%) were removed due to fishing for species other than trout. Eighty-eight anglers were represented from Ice House Lake (n = 12), Little Granite Lake (n = 27), Pickerel Lake (n = 37) and Rainbow Lake (n = 12). Angler visits and total fishing hours were greatest on Pickerel Lake and Little Granite Lake, followed by Ice House Lake and Rainbow Lake (Appendix Table 2). However, angler hours per surface acre were greatest on Pickerel Lake and Ice House Lake.

Time spent angling per fishing trip ranged from 2.6 – 3.6 hours (mean trip length per lake) but was not considered different between lakes (P > 0.05; Kruskal Wallace test). Travel distance by anglers was lower on Ice House Lake (4.1 ± 3.3 miles; mean ± SE; P < 0.05 in all comparisons; Dunn's test) compared to Little Granite Lake (20.5 ± 4.8 miles; mean ± SE), Pickerel Lake (42.1 ± 5.1 miles; mean ± SE) and Rainbow Lake (36.1 ± 9.3 miles; mean ± SE), which were all similar (P < 0.05 in all comparisons; Dunn's test). Out-of-state anglers frequented Rainbow Lake (n = 6) and Pickerel Lake (n = 2; Figure 2) most. Overall, greater fishing effort separated Pickerel Lake and Little Granite Lake from Rainbow Lake and Ice House Lake (PC1; Figure 2), while a greater willingness to travel by resident and non-resident anglers separated Pickerel Lake and Rainbow Lake from Little Granite Lake and Ice House Lake (PC2; Figure 2).

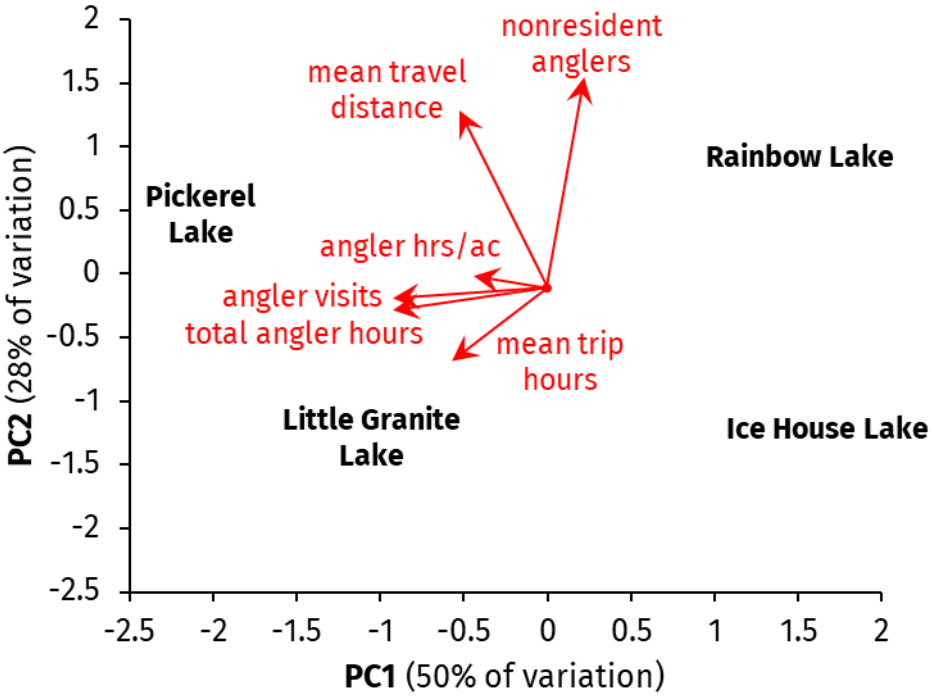

Figure 2. Principal components biplot of angler effort metrics. The length and directionality of vectors (red arrows) displays the relative importance that each metric has on each principal component and how lakes are dispersed in ordination space. For example, nonresident anglers were important drivers of variation in PC2, with greater nonresident anglers fishing Rainbow Lake compared to Ice House Lake and Little Granite Lake.

Exploitation of yearling trout was highest on Pickerel Lake and Ice House Lake, followed by Little Granite Lake and Rainbow Lake (Figures 3 & 4). Catch and harvest of trout was greatest on Pickerel Lake and Little Granite Lake, which both had greater fishing effort compared to Ice House Lake and Rainbow Lake (Appendix Tables 2 & 3; Figure 3). Catch rates (fish caught/hour) were highest on Pickerel Lake and Ice House Lake but were not considered different between all lakes (P > 0.05; Kruskal Wallace

test; Appendix table 3). Harvest rates (fish harvested/hour) were higher on Pickerel Lake (1.4 fish harvested/hour) and Ice House Lake (0.6 fish harvested/hour) compared to Little Granite Lake and Rainbow Lake ($P < 0.05$; Dunn's test; Appendix Table 3). Catch and harvest per surface acre were greatest on Pickerel Lake and Ice House Lake (Appendix Table 3). The proportion of anglers that caught daily bag limits was higher on Pickerel Lake (45.9%) and Ice House Lake (33.3%) compared to Little Granite Lake (25.9%) and Rainbow Lake (16.7%). Percentages of stocked trout caught ranged from 38% (Rainbow Lake) to 92% (Pickerel Lake) with an average of 61%. Exploitation rates ranged from 7.4% - 69.8% with an average of 31.9% ± 13.5% (± standard error). Exploitation rates were highest on Pickerel Lake (70%), followed by Little Granite Lake (31.0%), Ice House Lake (19.0%) and Rainbow Lake (7.0%; Figure 3).

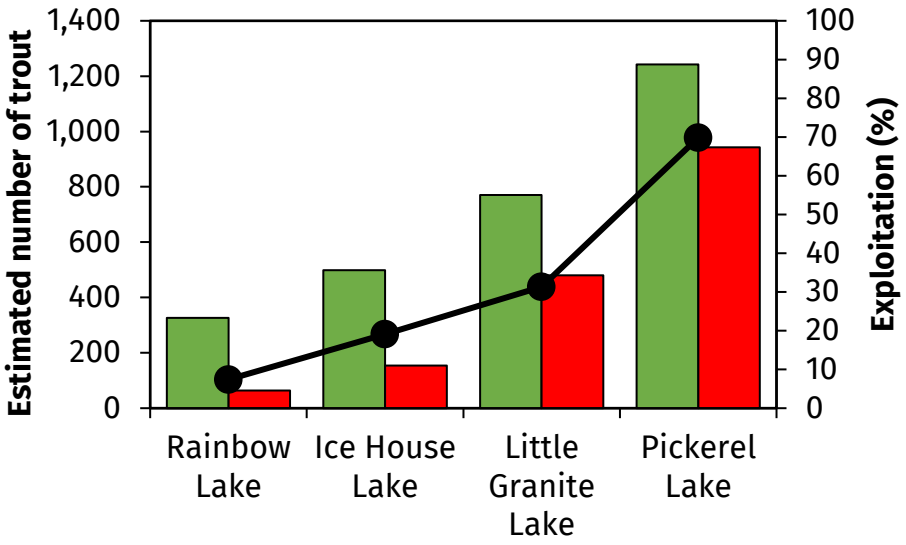

Figure 3. Estimated number of trout caught (green bars) and harvested (red bars) in each inland trout stocked lake during 2023. The exploitation rate is represented by the black dots.

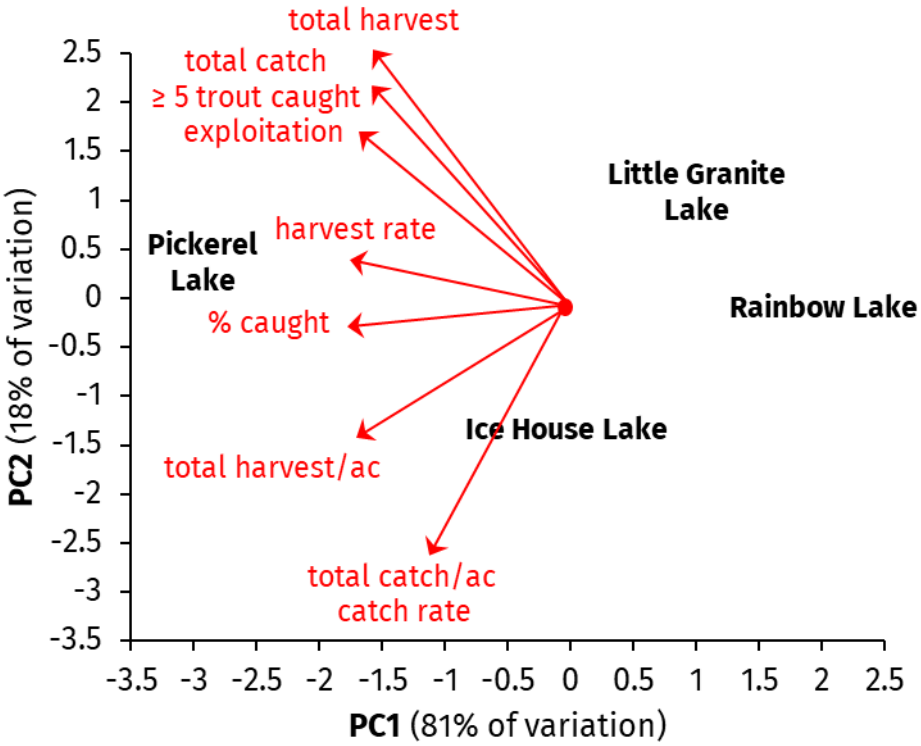

Figure 4. Principal components biplot of angler catch and harvest metrics. The length and directionality of vectors (red arrows) displays the relative importance that each metric has on each principal component and how lakes are dispersed in ordination space. For example, the percent of stocked trout caught was an important driver of variation in PC1, with a greater percentage caught in Pickerel Lake compared to Rainbow Lake.

Seasonal fishing effort was highest during May and subsequently declined from summer to fall (Figure 5). Pickerel Lake was the only lake with higher effort (number of angler trips) during June compared to May (Figure 5). Mean catch and harvest rates were highest during the spring (May – June) and subsequently declined through summer and fall (Figure 6). Estimates of mean catch and harvest rates, equally weighted across all lakes, were highly variable and not considered different ($P > 0.05$ in both comparisons; Kruskal Wallace test). Data was considered limited during July – October with less than five responses within each month.

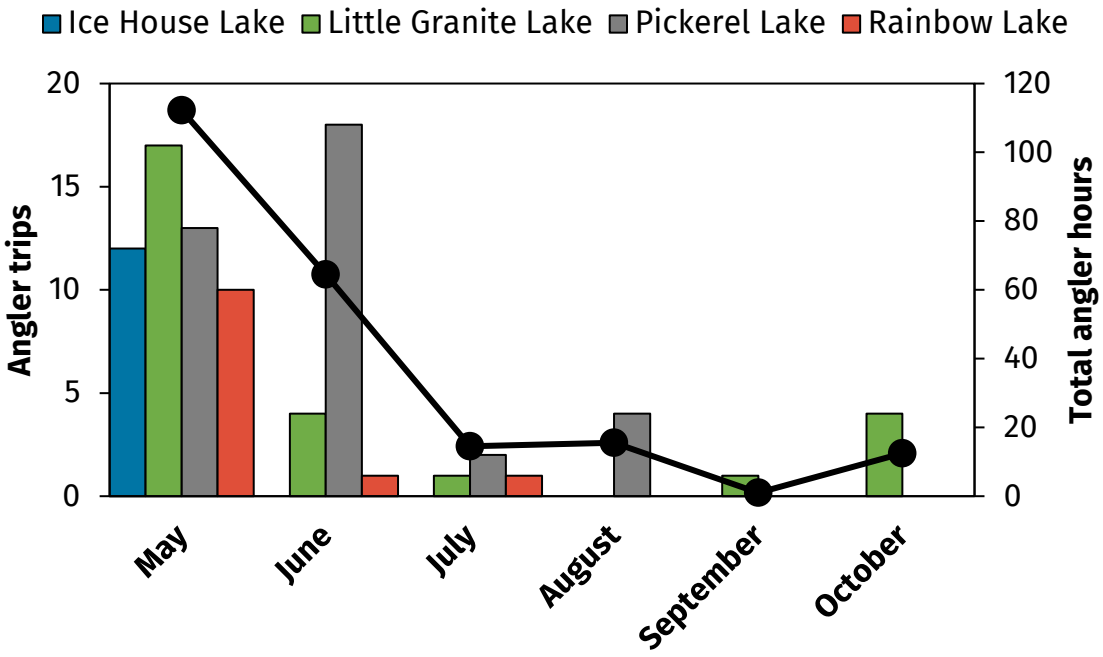

Figure 5. Seasonal distribution of angler effort (number of anglers and total angler hours) on Ice House Lake (blue bars), Little Granite Lake (green bars), Pickerel Lake (gray bars) and Rainbow Lake (red bars) during May – October 2023.

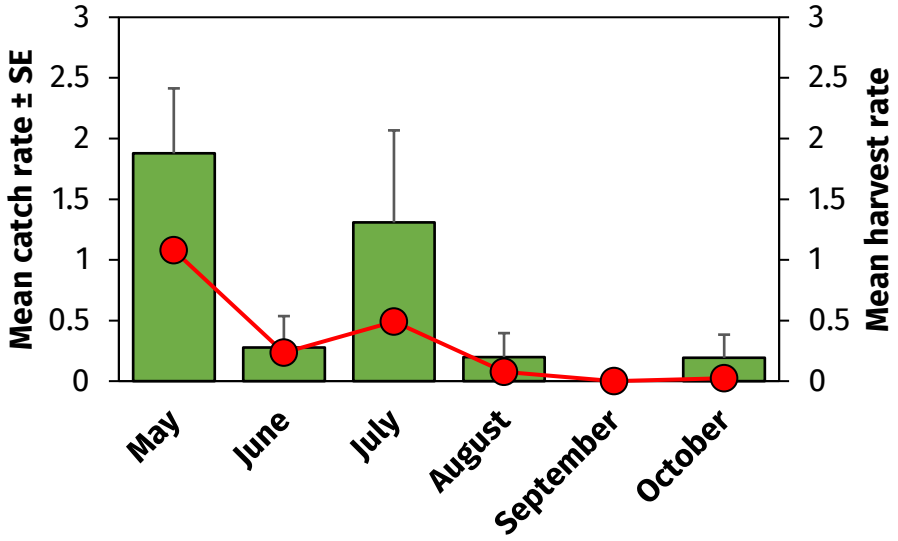

Figure 6. Seasonal distribution of mean angler catch rates (fish caught/hour; green bars) and harvest rates (fish harvested/hour; red dots and line) May – October 2023. Mean estimates used equal weighting for each lake.

Fishing effort rank scores were greatest for Pickerel Lake followed by Little Granite Lake, Rainbow Lake and Ice House Lake. Catch and harvest rank scores were similarly highest for Pickerel Lake followed by Ice House Lake, Little Granite Lake and

Rainbow Lake. Mean rank scores considering both effort and catch and harvest metrics were greatest for Pickerel Lake followed by Little Granite and Ice House lakes, which tied, and lastly Rainbow Lake (Figure 7). The mean rank score for Pickerel Lake was considered higher ($P < 0.05$ for all comparisons; Dunn's test) than Ice House Lake, Little Granite Lake and Rainbow Lake, which were all similar ($P > 0.05$ for all comparisons; Dunn's test; Figure 7). Thus, the stocking priority rank would be 1) Pickerel Lake and 2) Little Granite Lake, Rainbow Lake and Ice House Lake.

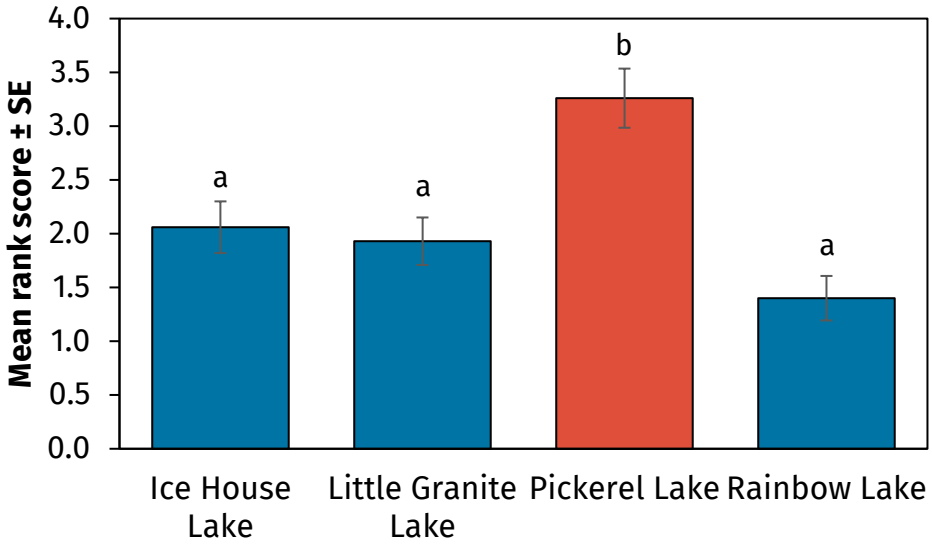

Figure 7. Mean rank analysis of effort and catch and harvest metrics for Ice House Lake, Little Granite Lake, Pickerel Lake and Rainbow Lake. Letters represent outcomes indicated by a Dunn's test following Holm's Sequential Bonferroni corrections. Similar letters are not considered different.

Discussion

Central to put-and-take fisheries is ensuring anglers are exploiting the fishery, and exploitation rates of catchable-sized trout tend to be highly variable in lake systems (High and Meyer 2009; Wiley et al. 1993). Exploitation rates of stocked trout observed during this study were highly variable and ranged from 7.4% - 69.8% with a mean estimate of 31.9%. A similar evaluation of three inland trout stocked lakes in northeastern Wisconsin had comparable exploitation rates that ranged from 4.4% – 74.4% with a mean estimate of 28.4% (unpublished data; Gregory Matzke; Wisconsin Department of Natural Resources). Similarly, a study of 54 Idaho lakes had exploitation rates of catchable-sized rainbow trout ranging from 0% - 76% with a mean estimate of 23% (Cassinelli and Meyer 2018). Several factors likely influence exploitation rates within put-and-take trout fisheries including waterbody size and access, stocked product and survival of stocked fish (Cassinelli and Meyer 2018). Ice House Lake and Rainbow Lake are small compared to Pickerel Lake and Little Granite

Lake, but shorelines are publicly owned and largely accessible to shore anglers. Canoe access is also available, whereas only small areas of Little Granite and Pickerel lakes are accessible to shore anglers. However, Little Granite and Pickerel lakes were the only lakes with boat accesses. This may have increased both effort and exploitation rates, but we could not explicitly test if effort and catch varied between boat and shoreline anglers.

Fishing effort targeting catchable-sized trout was highest immediately following the fishing opener and subsequently declined as the season progressed. This pattern is typical of put-and-take trout fisheries which are often referred to as 'pulse-fisheries' (Rowe et al. 2021). Management of these systems commonly monitors fishing effort, catch and harvest during a short period of time following a stocking event due to personnel and budget constraints (Rowe et al. 2021). Our study used relatively cost-effective kiosk stations to passively assess fishing effort, catch and harvest throughout the trout fishing season. Each kiosk station cost approximately $100 in materials ($600 total). Staff time and travel mileage were minimal and consisted of only two trips to each location for deployment and pickup as kiosks were only checked during the season when we were in the area for other purposes. Additionally, kiosk stations can be re-used annually and have broader survey applications. Passive kiosk creel surveys are more cost effective than traditional, in-person creel surveys and successfully gauged angler effort, catch and harvest in these put-and-take trout lakes.

This study accounted for only spring stocking of yearling trout and not brood stock trout. Fall stocking of larger brood stock trout, in addition to spring yearlings, could attract additional effort and harvest. Fall stocking of brood stock trout creates a fishery during October through early winter, but if anglers assume trout survive through the winter in all lakes, then this could attract additional effort during the spring. Three of the four fisheries evaluated are stocked with brood stock trout, but Little Granite Lake is the only lake that doesn't frequently winterkill. However, summer conditions in Little Granite are frequently unsuitable for trout. Some of these lakes are susceptible to either winter or summer conditions that would not sustain carryover of stocked trout, but such environmentally driven conditions are variable annually. Annual carryover of trout was not accounted for in this study and thus the exploitation rate of the 2023 stocked year class may have been over-estimated if carry over of trout occurred. Lower Pine Lake was the only lake that did not receive spring yearling trout and was a relatively new stocking, which likely contributed to the low number of creel questionnaires completed.

There were several assumptions made during this study that could have influenced angler effort, catch and harvest estimates. The number of anglers was not explicitly

asked on the questionnaire, so all questionnaires were assumed to be completed by a single angler unless the harvest indicated was greater than a single person's daily limit. There were six instances in which daily harvest exceeded five trout, and the number of anglers was corrected to two. There were likely instances where more than one angler was represented on a creel form, which would have negatively biased estimates of total anglers and fishing trip hours and positively biased angler catch and harvest rates. Exploitation estimates would not have been influenced by variability in the number of anglers within a fishing party. Future creel surveys using a similar passive kiosk design with questionnaires should explicitly ask how many anglers were present.

Exploitation rates derived from passive creel kiosk surveys are only as accurate as the estimates of non-reporting rates used. A non-reporting rate of 9.07 anglers per 1 completed creel questionnaire was used in this survey to estimate total catch, harvest and exploitation. This non-reporting estimate was generated from a survey of three northeastern Wisconsin put-and-take trout lakes with single, well-defined access points where effort could be accurately assessed using trail cameras (unpublished data; Gregory Matzke; Wisconsin Department of Natural Resources). We attempted to locate kiosk stations near boat ramps and trails to intercept as many anglers as possible, but not all anglers may have encountered the kiosks resulting in negatively biased estimates of effort, catch, harvest and exploitation. Additionally, the static non-reporting rate of 9.07 anglers per 1 completed creel questionnaire represented an annual estimate, but more recent work suggests this rate may vary seasonally. It is likely lower immediately following stocking and increases with time from stocking (unpublished data; Gregory Matzke; Wisconsin Department of Natural Resources). Future surveys should consider using finer scale (seasonally or monthly) estimates of non-reporting rates, if pre-defined and available, to improve the temporal resolution of catch and exploitation estimates. Alternatively, trail cameras could be implemented to index effort alongside kiosk stations to estimate non-reporting rates. However, multiple access points or poorly defined access points are likely to negatively bias angler effort.

Stocking rates of yearling trout ranged from 75 to 150 fish/acre, yet angler catch rates (trout/angler hour) did not differ between lakes. Our results paralleled that of Hyman et al. (2016), who also found no correlation between stocking rates and angler catch rates of trout in Virginia lakes. Although, Peterson and Sullivan (2013) found that higher stocking rates were correlated with higher catch rates on lakes in Alberta, Canada; regardless of stocking rates, trout populations remained low-density with low catch rate fisheries. Stocking rates examined in these studies were greater (mean annual stocking density of 458 and 223 fish/acre for Hyman et al. (2016) and Peterson and Sullivan (2013), respectively) than those used in our study, yet even with lower

stocking rates our systems appeared at or near carrying capacity or levels that would affect catch rates. Average catch rates observed during this study (1.45 ± 0.48 trout/angler hour; standard deviation) were greater than those of Hyman et al. (2016; 0.75 ± 0.78 trout/angler hour; standard deviation) and Peterson and Sullivan (2013; 0.27 ± 0.27 trout/angler hour; standard deviation) despite lower stocking rates. This could be driven by higher survival or increased catchability of stocked trout in Wisconsin systems.

Management of put-and-take trout lakes should prioritize lakes with high angler use and exploitation, especially due to the increasing costs associated with hatchery rearing and transport. Our goal was to 1) prioritize the importance of each put-and-take trout lake and 2) guide future stocking efforts based on angler effort, catch and harvest metrics. We assessed the current put-and-take trout fisheries in Barron and Polk Counties and empirically generated an angler effort and exploitation-based priority ranking to guide future stocking efforts. Although this study was limited in both space (only 4 lakes) and time (only a single year), it offers a simple approach to quantify effort, catch and harvest metrics and generate a between-lakes priority ranking for future trout stocking efforts. The within-lakes stocking strategies should be refined based on catch rates and optimized to angler effort. In other words, strategies should minimize numbers of stocked trout while maintaining threshold catch rates to attract anglers. Since angler catch rates did not differ with stocking rates, the Ice House Lake stocking quota of 150 fish/acre could be reduced to 100 fish/acre without likely impacting angler catch rates. High angler effort on Little Granite Lake could warrant an increase in stocking from 75 fish/acre to 100 fish/acre.

Recommendations

1. Maintain current trout stocking rates of 100 yearlings/acre on Pickerel Lake and Rainbow Lake. Insufficient data was collected on Lower Pine Lake and the Osceola Millpond to justify a change in management actions at this time.
2. The Ice House Lake stocking quota of 150 trout/acre should be reduced to 100 fish/acre. A reduced stocking rate would not be expected to reduce angler catch rates.
3. If surplus hatchery products are available, the Little Granite Lake stocking quota should be increased from 75 trout/acre to 100 trout/acre due to high angling effort.
4. If available, creel kiosks should be deployed at each lake prior to the season opener during the next few years to better evaluate angler use and exploitation temporally. Kiosks should be maintained on site through early winter to assess angler effort and exploitation of fall stocked trout.

Acknowledgements

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Appendices

Appendix Table 1. Trout stocking records for Little Granite Lake, Osceola Creek Millpond, Lower Pine Lake, Pickerel Lake, Ice House Lake and Rainbow Lake during 2018 – 2023.

YEAR	LAKE	SPECIES	STRAIN	AGE CLASS	NUMBER STOCKED

2023	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,535*
2023	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*75*
2022	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,725*
2022	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*75*
2021	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,898*
2021	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*95*
2020	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,615*
2020	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*124*
2019	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*90*
2019	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,540*
2018	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*90*
2018	*LITTLE GRANITE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,725*
2023	*OSCEOLA CREEK*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*300*
2022	*OSCEOLA CREEK*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*294*
2021	*OSCEOLA CREEK*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*324*
2020	*OSCEOLA CREEK*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*200*
2019	*OSCEOLA CREEK*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*200*
2018	*OSCEOLA CREEK*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*150*
2023	*LOWER PINE LAKE*	*BROWN TROUT*	*ST. CROIX*	*ADULT*	*130*
2022	*LOWER PINE LAKE*	*BROWN TROUT*	*ST. CROIX*	*ADULT*	*130*
2021	*LOWER PINE LAKE*	*BROWN TROUT*	*ST. CROIX*	*ADULT*	*90*
2018	*LOWER PINE LAKE*	*BROWN TROUT*	*ST. CROIX*	*YEARLING*	*900*
2023	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,351*
2023	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*75*
2022	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*3,001*
2022	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*75*
2021	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,651*
2021	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*150*
2020	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*150*
2020	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,500*
2019	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*41*
2019	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,500*
2018	*PICKEREL LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*1,500*
2018	*PICKEREL LAKE*	*BROOK TROUT*	*ST. CROIX*	*FINGERLING*	*100*
2023	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*808*
2022	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*897*
2021	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*987*
2020	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*530*
2019	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*482*
2018	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*ADULT*	*35*
2018	*ICE HOUSE LAKE*	*RAINBOW TROUT*	*ERWIN*	*YEARLING*	*391*

2023	RAINBOW LAKE	BROWN TROUT	ST. CROIX	YEARLING	860
2023	RAINBOW LAKE	BROWN TROUT	ST. CROIX	ADULT	25
2022	RAINBOW LAKE	BROWN TROUT	ST. CROIX	YEARLING	857
2022	RAINBOW LAKE	BROWN TROUT	ST. CROIX	ADULT	25
2021	RAINBOW LAKE	BROWN TROUT	ST. CROIX	YEARLING	833
2021	RAINBOW LAKE	BROWN TROUT	ST. CROIX	ADULT	24
2020	RAINBOW LAKE	BROWN TROUT	ST. CROIX	ADULT	30
2020	RAINBOW LAKE	BROWN TROUT	ST. CROIX	YEARLING	828
2019	RAINBOW LAKE	RAINBOW TROUT	ERWIN	YEARLING	600
2019	RAINBOW LAKE	BROWN TROUT	ST. CROIX	YEARLING	500
2019	RAINBOW LAKE	RAINBOW TROUT	ERWIN	ADULT	26
2018	RAINBOW LAKE	RAINBOW TROUT	ERWIN	YEARLING	1,000
2018	RAINBOW LAKE	RAINBOW TROUT	ERWIN	ADULT	109

Appendix Table 2. Fishing effort metrics estimated from the kiosk creel survey during 2023.

FISHING EFFORT	ICE HOUSE LAKE	LITTLE GRANITE LAKE	PICKEREL LAKE	RAINBOW LAKE
Estimated Angler Visits	116	262	359	116
Estimated Total Angler Hours	281	664	912	247
Estimated Angler hours/acre	47	29	61	31
Mean Trip Hours ± SE	2.4 ± 0.3	3.6 ± 0.4	2.9 ± 0.3	2.6 ± 0.5
Mean Travel Dist. ± SE	4.1 ± 3.3	20.5 ± 4.8	42.1 ± 5.1	36.1 ± 9.3
Out of State Anglers	0	0	2	6

Appendix Table 3. Catch and harvest metrics estimated from the kiosk creel survey during 2023.

CATCH AND HARVEST	ICE HOUSE LAKE	LITTLE GRANITE LAKE	PICKEREL LAKE	RAINBOW LAKE
Mean Catch/Hour ± SE	1.8 ± 0.5	0.9 ± 0.2	1.9 ± 0.3	1.2 ± 0.5
Mean Harvest/Hour ± SE	0.6 ± 0.2	0.5 ± 0.2	1.4 ± 0.3	0.4 ± 0.2
Estimated Total Catch	499	771	1243	327
Estimated Total Harvest	154	481	943	63
Estimated Total Catch/Acre	83.1	33.5	82.8	40.8
Estimated Total Harvest/Acre	25.7	20.9	62.9	7.9
% of Stocked Trout Caught	62	50	92	38
Exploitation Rate	19	31	70	7
Probability of ≥ 5 Trout Caught	33.3	25.9	45.9	16.7

Appendix Table 4. Fishing effort and catch and harvest rank scores for Ice House Lake, Little Granite Lake, Pickerel Lake and Rainbow Lake during 2023.

FISHING EFFORT	ICE HOUSE LAKE	LITTLE GRANITE LAKE	PICKEREL LAKE	RAINBOW LAKE
Angler Visits	*1*	*3*	*4*	*1*
Total Angler Hours	*2*	*3*	*4*	*1*
Angler hours/acre	*3*	*1*	*4*	*2*
Mean Trip Hours ± SE	*1*	*1*	*1*	*1*
Mean Travel Dist. ± SE	*1*	*2*	*2*	*2*
Out of State Anglers	*1*	*1*	*3*	*4*
CATCH AND HARVEST				
Mean Catch/Hour ± SE	*1*	*1*	*1*	*1*
Mean Harvest/Hour ± SE	*2*	*1*	*3*	*1*
Estimated Total Catch	*2*	*3*	*4*	*1*
Estimated Total Harvest	*2*	*3*	*4*	*1*
Estimated Total Catch/Acre	*4*	*1*	*3*	*2*
Estimated Total Harvest/Acre	*3*	*2*	*4*	*1*
% of Stocked Trout Caught	*3*	*2*	*4*	*1*
Exploitation Rate	*2*	*3*	*4*	*1*
Probability of ≥ 5 Trout Caught	*3*	*2*	*4*	*1*
SUM	*31*	*29*	*49*	*21*
MEAN	*2.1*	*1.9*	*3.3*	*1.4*
STANDARD ERROR	*0.24*	*0.22*	*0.27*	*0.21*