MONTANA FISH, WILDLIFE, AND PARKS

FISHERIES DIVISION

DINGELL-JOHNSON REPORT

STATE: Montana

PROJECT: Statewide Fisheries Management

TITLE: Region 3 River and Lake Sampling

JOB: Madison-Gallatin Drainages Fisheries Management Biologist

FISCAL YEAR: 2025

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INTRODUCTION

The Madison and Gallatin River drainages are in Region 3 of the Central Fishing District of Montana (Figure 1). Both drainages encompass a wide variety of habitats including rivers, tributary streams, natural lakes, reservoirs, and ponds. Both drainages combined over 540,000 angler days according to the most recent statewide angling pressure survey (League and Caball 2021). This report summarizes the fisheries management work conducted by Montana Fish, Wildlife & Parks (FWP) within the Madison and Gallatin River drainages during the 2024 field season.

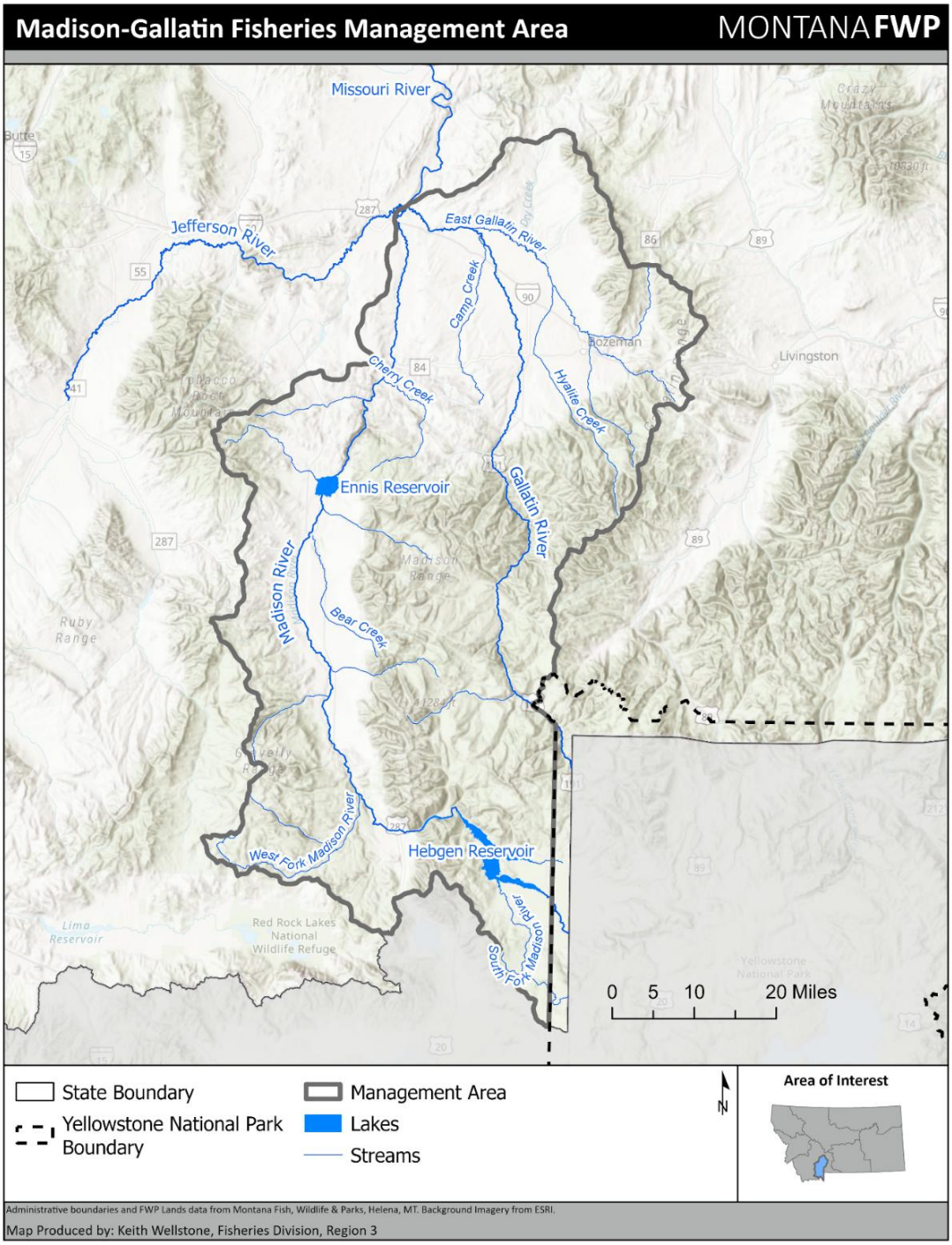

Figure 1. The Montana Fish, Wildlife & Parks Madison-Gallatin management area in Region 3, Montana.

METHODS

River Sport Fisheries Monitoring

Montana Fish, Wildlife & Parks monitors Rainbow Trout *Oncorhynchus mykiss* and Brown Trout *Salmo trutta* populations in three long-term monitoring sections of the Madison River, two sections of the Gallatin River, and two sections of the East Gallatin River (Table 1) to evaluate long-term trends of trout abundances and size structures. Sampling consistency has varied among sections because of observed population trends, personnel constraints, safety concerns, and variable environmental conditions (Table 1).

Table 1. Montana Fish, Wildlife & Parks long-term trout monitoring sections in the Madison, Gallatin, and East Gallatin rivers.

River	Section	Upstream latitude/longitude	Downstream latitude/longitude	Length (miles)	Sampling consistency
Madison	Pine Butte	44.86503, -111.55498	44.90004, -111.59212	3.3	High
Madison	Varney	45.23264, -111.75151	45.29483, -111.75607	4.85	High
Madison	Norris	45.58477, -111.59412	45.62295, -111.55044	4.2	High
Gallatin	Big Sky	45.25870, -111.25038	45.28168, -111.22547	2.5	Low
Gallatin	Logan	45.89163, -111.33690	45.88598, -111.40989	4.66	Moderate
East Gallatin	Hoffman	45.72517, -111.06727	45.72864, -111.07150	2.05	Low
East Gallatin	Thompson	45.80598, -111.13160	45.81960, -111.13928	1.76	Low

Crews conducted mark-recapture surveys in 2024 to estimate trout abundance and size-structure indices. Trout were collected by electrofishing using a drift-boat mounted, mobile-anode system. The number of passes required for the mark and recapture runs varied among sections, depending on the width and complexity of habitat. In sections that required multiple passes, electrofishing effort was distributed equally among the right bank, left bank, and middle of the river. Timing of the sampling was dependent on river conditions including temperature and discharge. Temperature was measured using a handheld probe, discharge was measured using the nearest Montana Department of Natural Resource and Conservation or United States Geological Survey gage station, and conductivity was measured using a handheld probe during each survey (Table 2).

Table 2. Summary of sampling designs, timeframes, and conditions during mark-recapture surveys conducted on long-term monitoring sites in the Madison and Gallatin drainages in 2024. Passes per event represent the number of electrofishing passes required to conduct a mark or recapture event. Discharge, water temperature, and conductivity represent the range of conditions measured during the surveys.

River	Section	Passes per event	Date of final recapture pass	Discharge (ft^3/s)	Temperature (F)	Conductivity (µS/cm)
Madison	Pine Butte	3	9/30/2024	955 – 1100	53 – 57	286 – 301
Madison	Varney	3	9/24/2024	1040 – 1210	49 – 55	255 – 296
Madison	Norris	3	3/22/3024	1250 – 1340	40 – 41	335 – 396
Gallatin	Big Sky	1	9/16/2024	267 – 275	51*	320 – 322
Gallatin	Logan	3	4/12/2024	730 – 750	44 – 48	391 – 393
East Gallatin	Hoffman	1	4/4/2024	82 – 108	43 – 45	481 – 526
East Gallatin	Thompson	1	3/25/2024	71 – 76	36 – 40	490 – 587

*Water temperatures were the same for both surveys.

Trout captured in the initial sampling events (marking runs) were anesthetized, weighed (g) and measured to total length (mm; converted to inches for this report), marked with a fin clip, and released. Crews conducted additional sampling events (recapture runs) 7 – 10 days after the recapture runs. Trout captured on the recapture runs were measured to total length, examined for existing fin clips, and weighed (if not a recapture). Length-class specific (1-inch length bins) abundance estimates were generated for Brown and Rainbow Trout using an R-based, proprietary FWP fisheries database and analysis tool. Capture histories for the recapture events were generated for each trout *i* with $y_i = 0$ representing a trout that was not a recapture and $y_i = 1$ representing a trout that was a recapture. This binary outcome was modeled using a generalized linear model with a Bernoulli distribution and a logit link function:

$$y_i \sim Bernoulli(p_i)$$

where p_i represents the detection probability for fish *i*. We modeled p_i using four models that test different hypotheses about the relationship between fish length and detection probability:

1) Null model: $$logit(p_i) = \beta_0$$

2) Length linear: $$logit(p_i) = \beta_0 + \beta_1 length.bin_i$$

3) Length quadratic $$logit(p_i) = \beta_0 + \beta_1 length.bin_i + \beta_2 length.bin_i^2$$

4) Length quadratic fixed intercept: $$logit(p_i) = -5 + \beta_1 length.bin_i + \beta_2 length.bin_i^2$$

We used Akaikes information criterion to determine the best-fitting model (Akaike 1998) and predicted detection probabilities (p_l) for each length bin *i* using weighted model averages. We summed the abundance estimates for each length bin to estimate total abundance ($\widehat{N}$).

Density estimates were standardized to stream mile:

$$\frac{\widehat{N}}{L}$$

where L represent the section length.

We calculated length frequencies for Rainbow and Brown Trout among sections by splitting each fish into 10-mm (≈ 0.4 inches) length bins and calculating the relative proportion of each length bin in the sample. We report these data as relative frequencies (%) to account for different sample sizes among years (Neumann and Allen 2008). Recaptured fish were removed from the analysis to avoid double-counting individuals and overinflating length groups with high recapture rates.

Montana Fish, Wildlife & Parks developed management goals for combined-species, trout densities and size structure for each of the Madison River long-term sampling sections using the approximate 66th percentiles of data collected over the past 20 years (Table 3). Management goals for 2024 Madison River trout densities were evaluated by summing Rainbow and Brown Trout abundances in each section and comparing them to the management goals. Management goals for the 2024 Madison River trout size-structures were evaluated by calculating the proportion of trout ≥ 10 inches that are also ≥ 16 inches in each section and comparing them to the management goals.

Table 3. Montana Fish, Wildlife & Parks management goals for trout abundances and size structures in three long-term monitoring sections of the Madison River.

	Management objectives	
Site	Density (trout ≥ 10 inches / mile)	Size structure (percentage of fish ≥ 10 inches that are also ≥ 16 inches)
Pine Butte	2,300	25%
Varney	1,200	35%
Norris	2,500	15%

Lake and Reservoir Sport Fisheries Monitoring

Montana Fish, Wildlife & Parks conducted standardized gillnetting surveys in Hebgen Reservoir, Ennis Reservoir, Hyalite Reservoir, and Wade Lake in 2024 to monitor the catch-per-unit-effort (CPUE) and average total length (mm; converted to inches for this report) of trout populations. The number of gillnets required for the surveys depended on the size of the waterbody (Table 4). Historically, Hebgen reservoir was monitored with 27 gillnets; however, new gill net locations were established in 2021 to provide better coverage of the reservoir while eliminating gill net sets in shallow habitats where capture efficacy was poor. This number was reduced to 10 gillnets in 2021 based on results of a sensitivity analysis (FWP Unpublished Data; Table 4). The fourth year of consecutive sampling occurred in Ennis Reservoir in 2024, and we are currently analyzing data to establish management goals for the Brown and Rainbow Trout fisheries.

Catch-per-unit-effort was calculated as the total number of each species per net night:

$$\frac{C}{E}$$

where C represents the total number of fish and E represents one net night. We then calculated the average CPUE for each species among all gillnets. This methodology was used for large reservoirs and lakes that are monitored by gillnetting in the Madison and Gallatin drainages.

Table 4. Locations, types, and dates of gillnet surveys conducted by FWP in 2024.

Lake	Gillnet type (floating/sinking)	Latitude	Longitude	Date set
Ennis Reservoir	Floating	45.45157	-111.6567	10/2/2024
Ennis Reservoir	Floating	45.44873	-111.6587	10/2/2024
Ennis Reservoir	Sinking	45.44863	-111.6598	10/2/2024
Ennis Reservoir	Sinking	45.42099	-111.6783	10/2/2024
Ennis Reservoir	Sinking	45.43074	-111.6875	10/2/2024
Ennis Reservoir	Floating	45.44225	-111.7029	10/2/2024
Hyalite Reservoir	Floating	45.48742	-110.9773	10/1/2024
Hyalite Reservoir	Floating	45.48593	-110.9723	10/1/2024
Hyalite Reservoir	Sinking	45.48458	-110.9774	10/1/2024
Hyalite Reservoir	Floating	45.48084	-110.9692	10/1/2024
Wade Lake	Floating	44.82291	-111.5787	9/4/2024
Wade Lake	Floating	44.81926	-111.5782	9/4/2024
Wade Lake	Floating	44.81473	-111.5725	9/4/2024
Wade Lake	Floating	44.81896	-111.5735	9/4/2024
Wade Lake	Sinking	44.81187	-111.5658	9/4/2024
Hebgen Reservoir	Floating	44.83538	-111.3070	6/4/2024
Hebgen Reservoir	Sinking	44.80671	-111.2685	6/4/2024
Hebgen Reservoir	Floating	44.78679	-111.2753	6/4/2024
Hebgen Reservoir	Floating	44.75961	-111.2613	6/4/2024
Hebgen Reservoir	Floating	44.75961	-111.2613	6/4/2024
Hebgen Reservoir	Sinking	44.74961	-111.2048	6/4/2024
Hebgen Reservoir	Sinking	44.77414	-111.2321	6/4/2024
Hebgen Reservoir	Floating	44.79131	-111.1686	6/4/2024
Hebgen Reservoir	Floating	44.82137	-111.2637	6/4/2024
Hebgen Reservoir	Floating	44.83676	-111.2899	6/4/2024

RESULTS AND DISCUSSION

River Sport Fisheries Monitoring

Madison River

Management goals

We did not meet abundance management objectives for any section in 2024. Abundances of trout/mile ≥ 252 mm increased slightly in Pine Butte and Varney but decreased in Norris to historic lows (Figure 2). Size-structure objectives were achieved in Pine Butte and Norris (Figure 3); however, the high proportion of trout ≥ 406 mm in Pine Butte may be a result of low capture probabilities biasing abundance estimates high for larger trout.

Pine Butte

The estimated densities of Rainbow Trout ≥ 152 mm in Pine Butte increased from 1340 trout/mile in 2023 to 2848 trout/mile in 2024 (Figure 4), exceeding the 25-year average. Younger age classes composed a large portion of the population in 2024, indicated by the increased frequency of rainbow trout ≤ 252 in our catch (Figure 5). The abundance of Brown Trout ≥ 152 mm in Pine Butte increased from 1257 trout/mile in 2023 to 2066 trout/mile in 2024, meeting the 25-year average. A high proportion of Brown Trout ≤ 252 observed in 2023 probably contributed to strong recruitment in 2024. High frequencies of brown trout ≤ 252 mm observed in 2024 indicate a strong year class was recruited to the sampling gear (Figure 5), which may result in large trout contributing to the Madison fishery in subsequent years.

Varney

Abundance of Rainbow Trout ≥ 152 mm has exceeded the 25-year average since 2020 and increased from 1,574 trout/mile in 2023 to 1,950 trout/mile in 2024 (Figure 4). An increase in the frequency of rainbow trout ≤ 252 mm from 2023 to 2024 indicate a strong year class was recruited to the sampling gear (Figure 6), which may result in large trout contributing to the Madison fishery in subsequent years. Brown Trout abundances decreased slightly below the 25-year average from 1,610 trout/mile in 2023 to 1,425 trout/mile in 2024. However, the overall increase in abundance of total trout ≥ 252 mm indicate good survival of previous year classes.

Norris

Abundances of trout ≥ 152 mm remain at historical lows in Norris (Figure 4). The estimated abundances of Rainbow Trout ≥ 152 mm declined from 1,248 trout/mile in 2023 to 695 trout/mile in 2024, but they increased slightly to 744 trout/mile in 2025. The truncated length-frequency histograms of Rainbow trout in recent years (Figure 7) indicate reduced recruitment and survival of Rainbow trout compared to populations observed in the 2000s and 2010s.

Brown Trout abundances decreased from 680 trout/mile in 2023 to 625 trout/mile in 2024, but they increased slightly to 768 trout/mile in 2025. Regardless, they remain below the 25-year average (Figure 4). Length frequencies of Brown Trout indicate recruitment is occurring (Figure 7), but abundance estimates indicate an overall decline in the population compared to the 25-year averages (Figures 2 and 4). These results indicate the need for management intervention to increase habitat complexity and refuge for Brown and Rainbow Trout in this section.

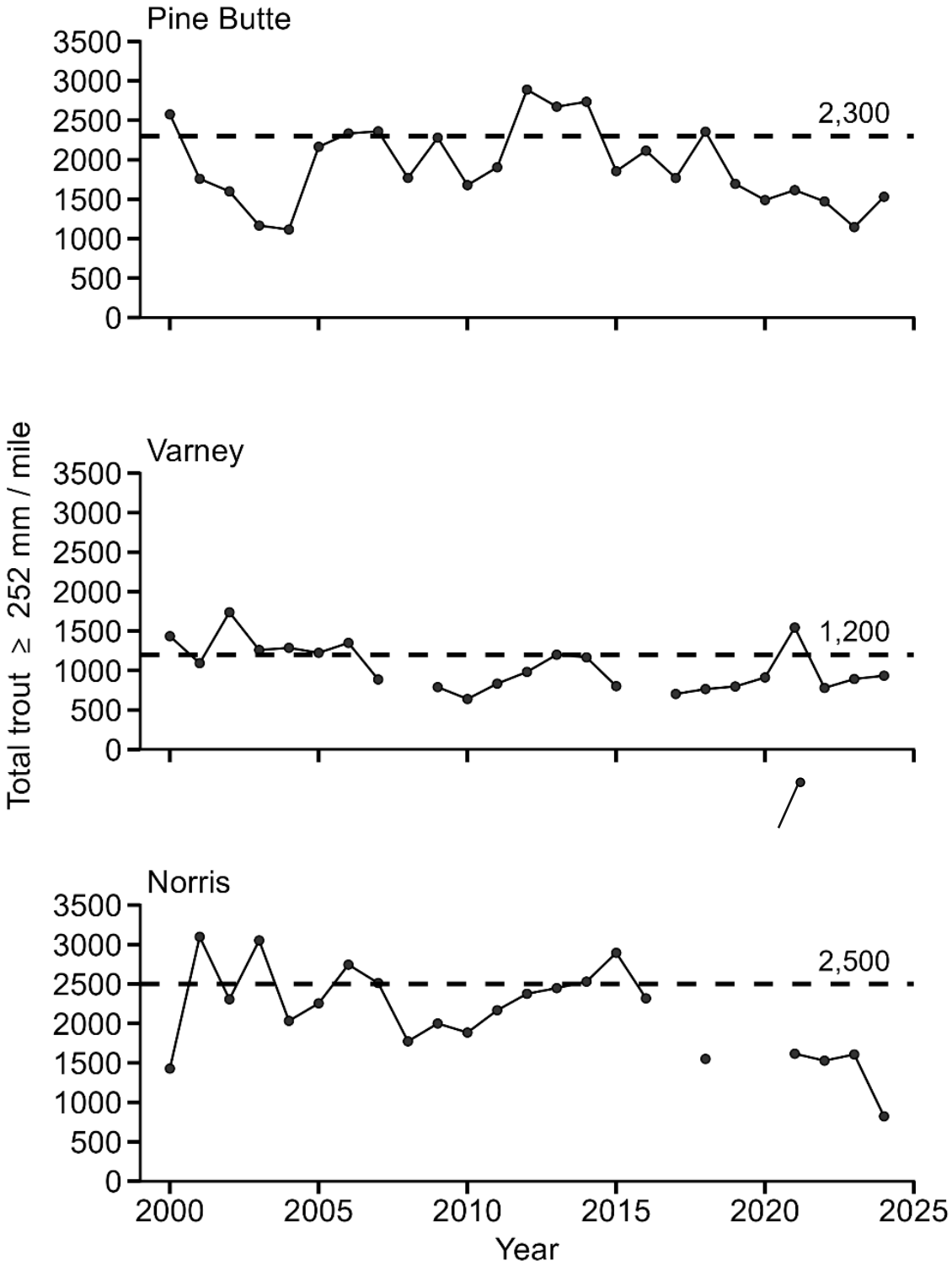

Figure 2. Estimated abundances of trout ≥ 252 mm (≈ 10“) in three long-term monitoring sections of the Madison River. Black dashed lines represent the management goals for trout abundance in each section.

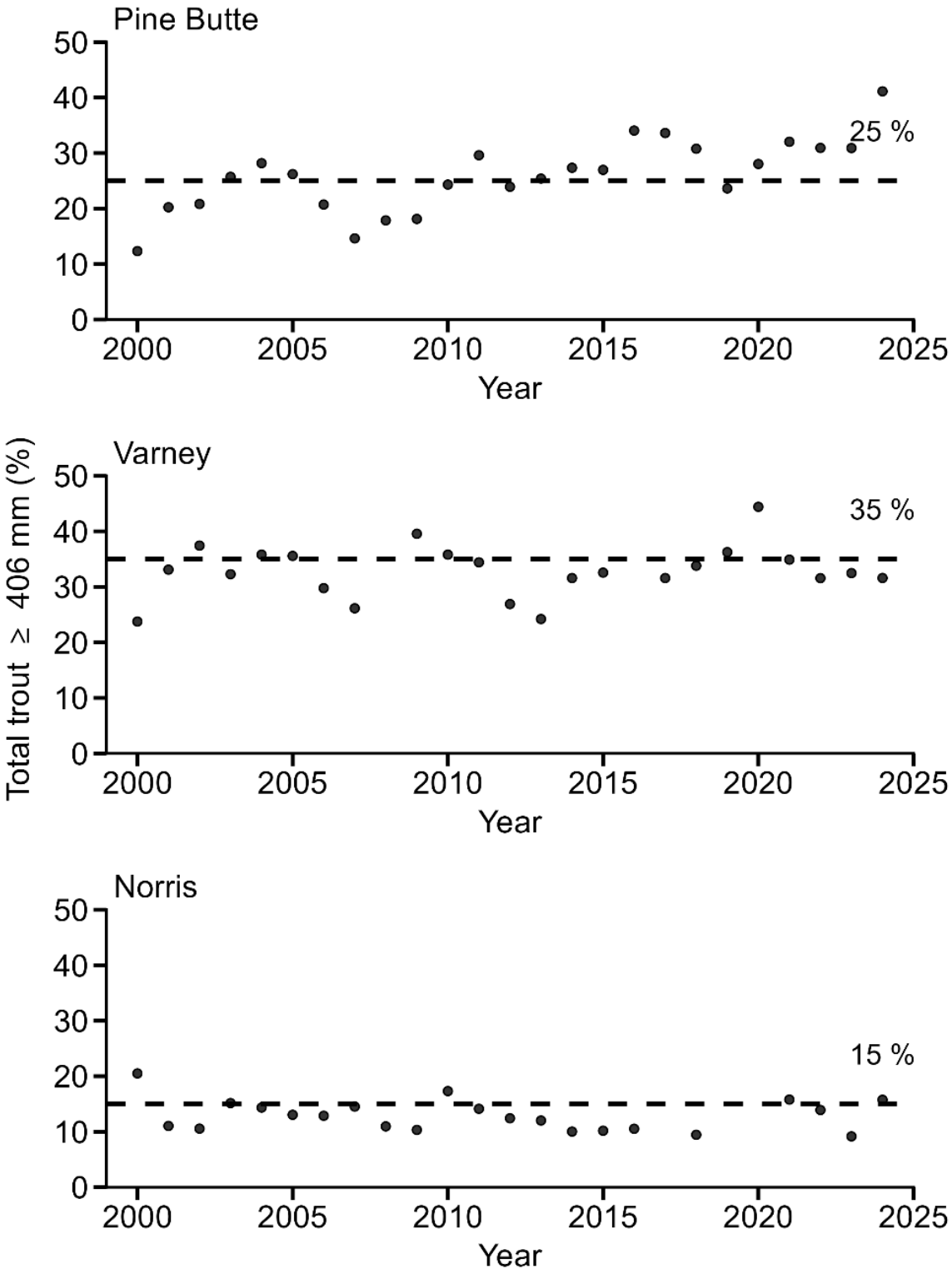

Figure 3. Percentages of ≥ 252 mm trout that were ≥ 406 mm (≈ 16“) in three long-term monitoring sections of the Madison River. Black dashed lines represent the management goals for trout size structure in each section.

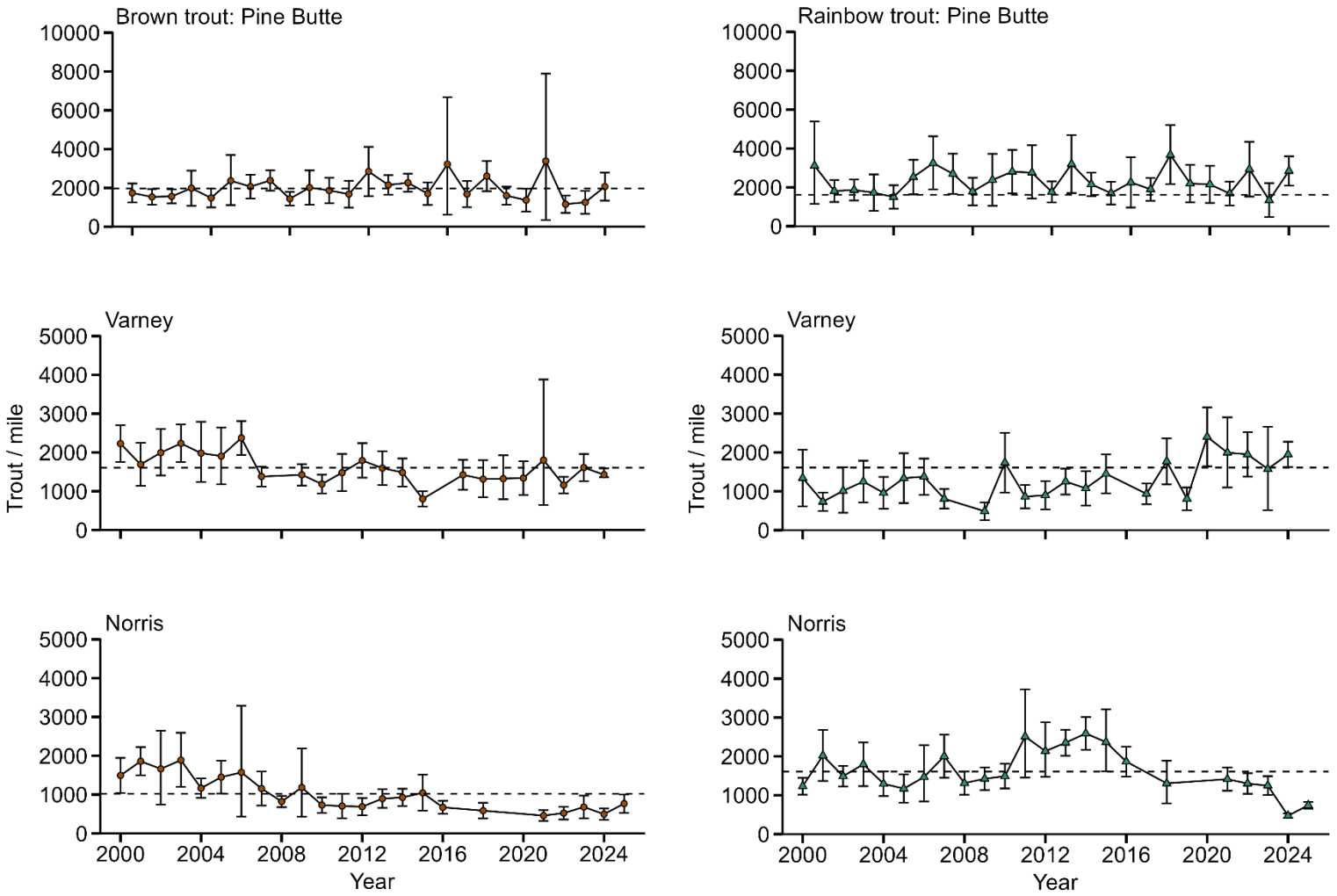

Figure 4. Estimated abundances of Brown (brown circles) and Rainbow Trout (green triangles) ≥ 152 mm (≈ 6“) in the three long-term sampling sections of the Madison River. Dashed lines represent the long-term average trout abundance (2000 to 2024; 2025 for the Norris section), and error bars represent 95% confidence intervals. We used 200 mm as the minimum size to calculate trout abundances in the Norris reach in 2024.

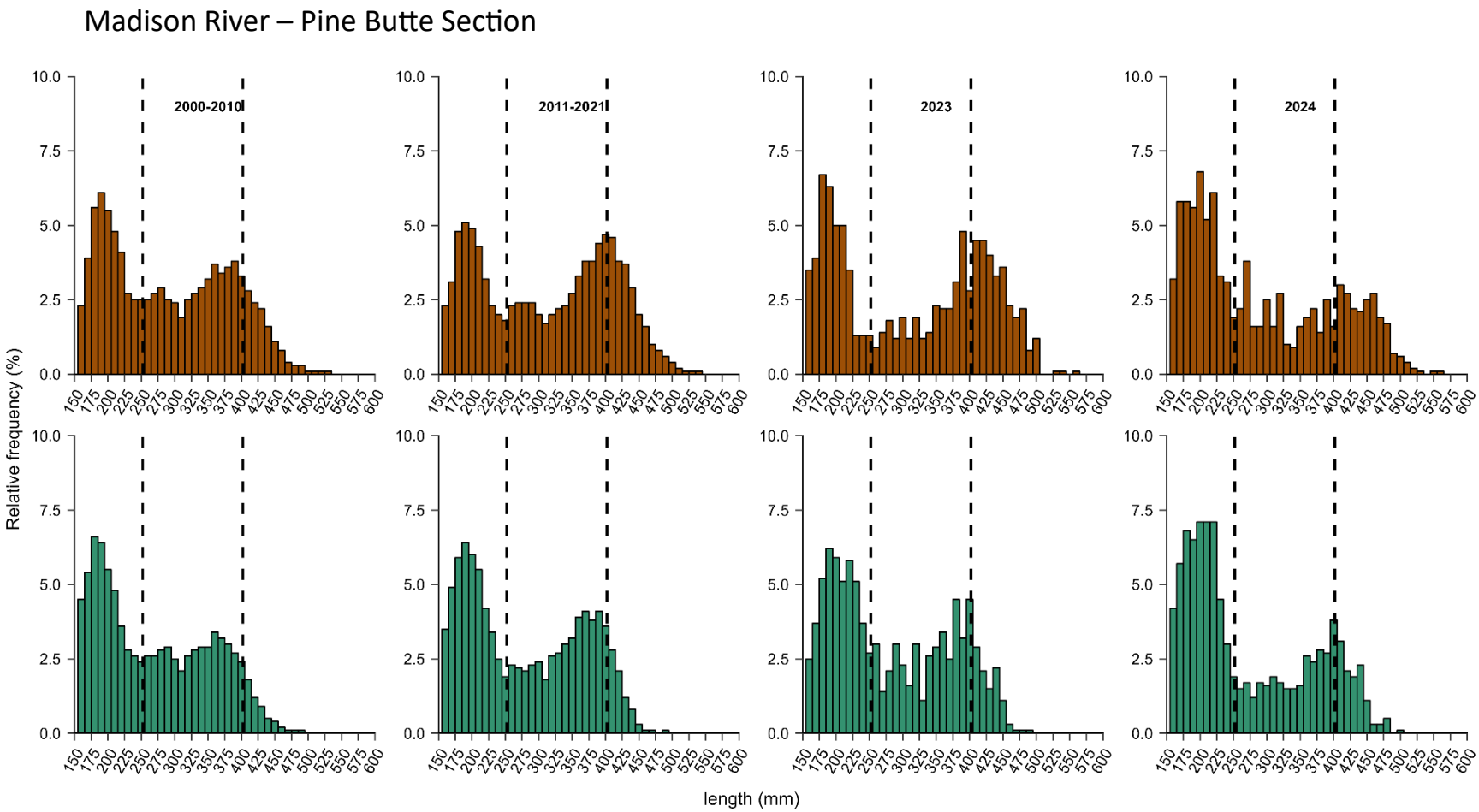

Figure 5. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Pine Butte Section of the Madison River. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

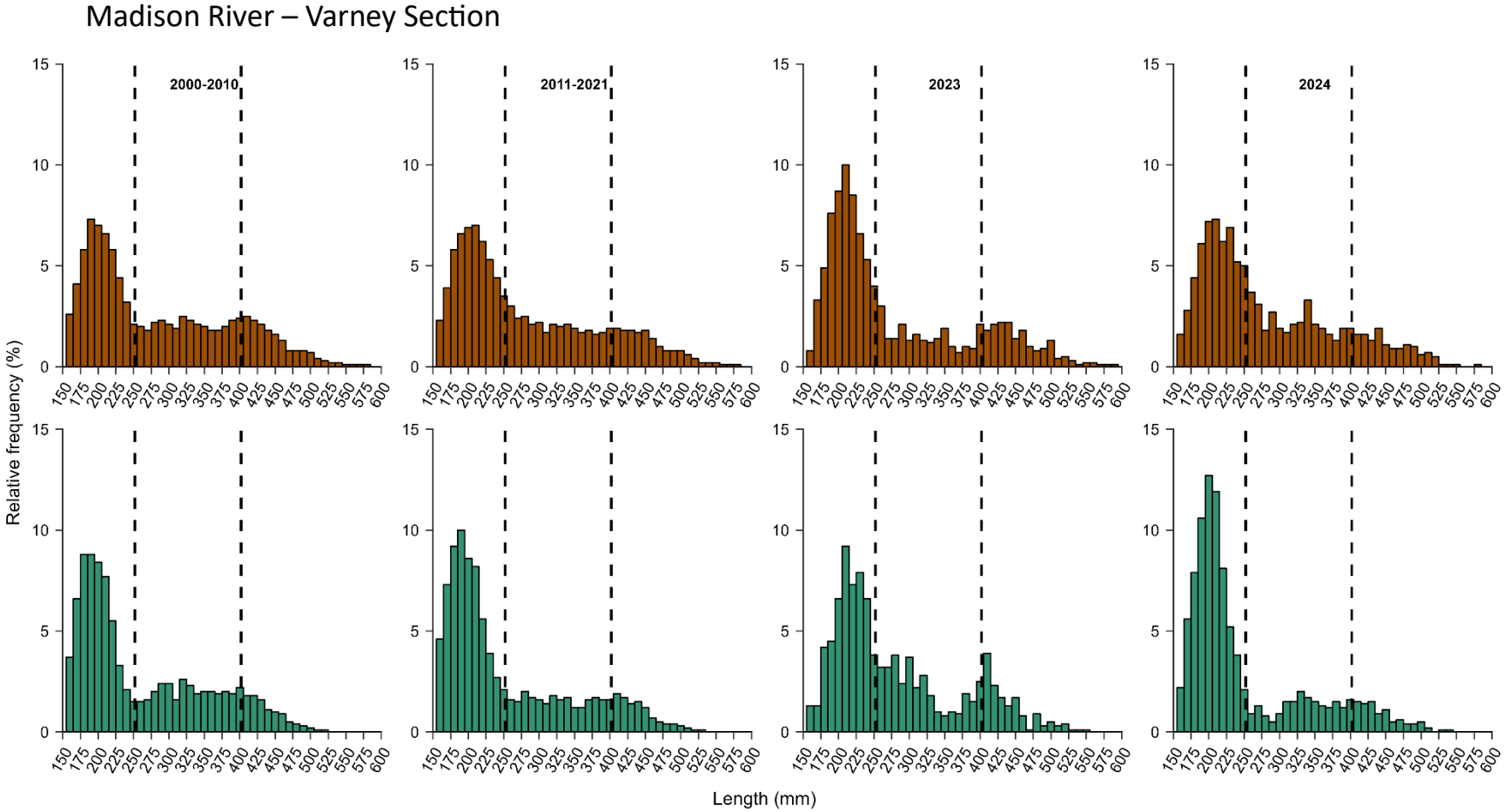

Figure 6. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Varney Section of the Madison River. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

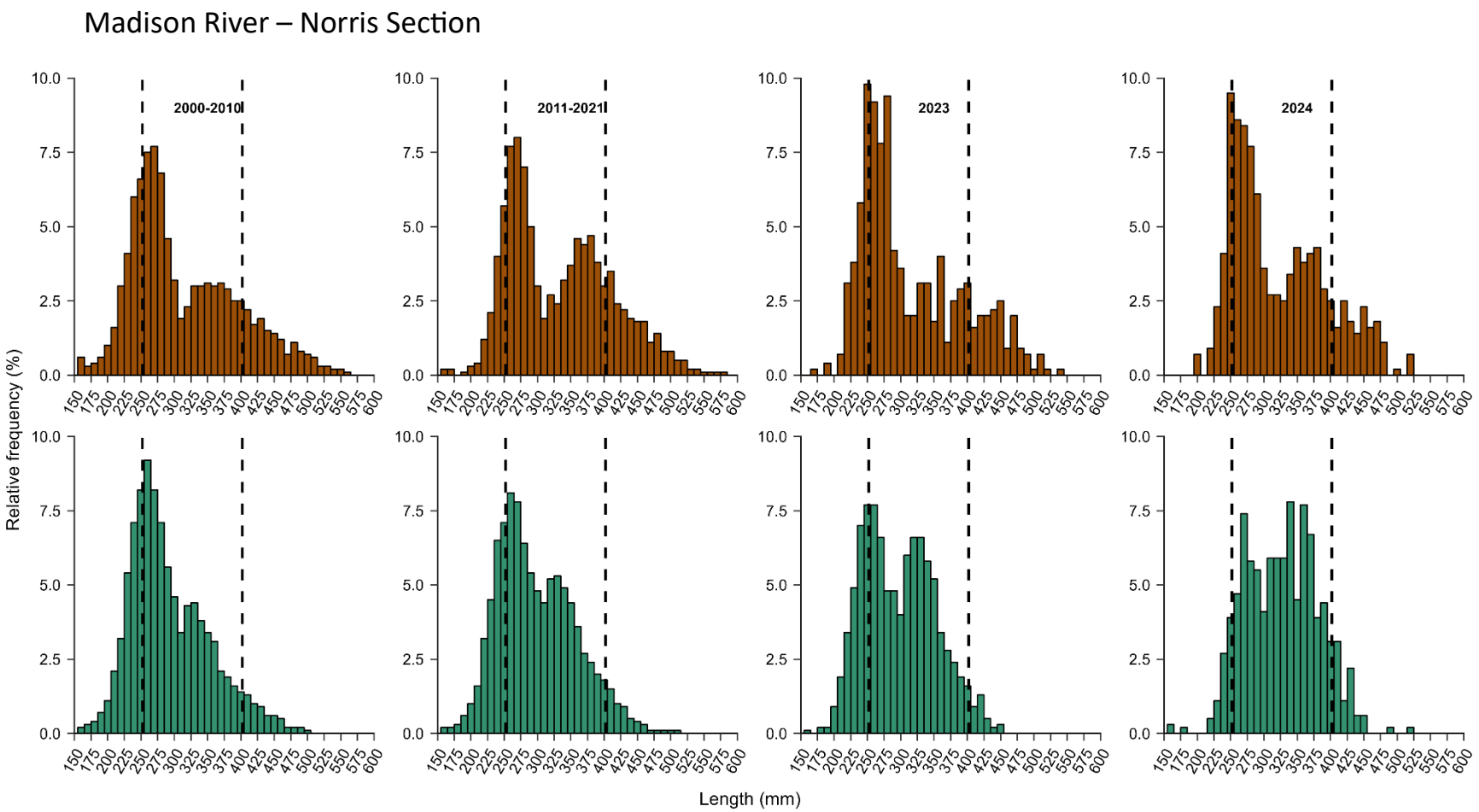

Figure 7. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Norris Section of the Madison River. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

Gallatin River

Big Sky

Montana Fish, Wildlife & Parks historically sampled two sections upstream and downstream of this section (Jack Smith and Porcupine); however, safety concerns and low-discharge conditions precluded the agency from consistently sampling both reaches. We identified the Big Sky section as a replacement because it intersects both previous sections, and the habitat is representative of those found in the upper Gallatin River. Brown and Rainbow Trout abundances therefore represent the status of the populations. Brown Trout densities decreased from 351 fish/mile in 2021 to 238 fish/mile in 2024. However, Rainbow Trout densities increased from 2438 fish/mile in 2021 to 2814 fish/mile in 2024 (Table 5). Inferring trends from two years of data is not feasible, but we will continue to monitor this section to ensure we can evaluate these population trends. Length frequencies of Brown and Rainbow Trout indicate good survival of large size classes and infrequent harvest by anglers (Figure 8). These high frequencies of large size classes could also indicate poor recruitment, but with the high trout densities observed and sufficient spawning and rearing habitat present in the system, it is more likely that our electrofishing capture efficiency is low for smaller size classes (e.g., trout < 200 mm; ≈ 8 inches).

Logan

Rainbow Trout densities in the Logan section have been relatively consistent from 2000 to 2024. Rainbow Trout densities increased from 198 fish/mile in 2021 to 391 fish/mile in 2024 and are above the long-term average of 362 fish/mile. Brown Trout densities are currently below the long-term average of 245 fish/mile but increased from 130 fish/mile in 2021 to 216 fish/mile in 2024 (Figure 9). Length frequencies of Brown and Rainbow Trout indicate good recruitment and survival of larger size classes (Figure 10). Length frequencies of Brown and Rainbow Trout also show a similar distribution to those observed between 2000 and 2010 indicating population dynamics (i.e., recruitment, growth, and mortality) in this section are relatively stable (Neuman and Allen 2008).

Table 5. Brown trout (LL) and Rainbow trout (RB) abundance estimates (trout/mile) and 95% confidence intervals in the Big Sky section of the Gallatin River in 2021 and 2024. Estimates include trout ≥ 152 mm.

Year	River	Section	Species	Fish/mile	95% LCI	95% UCI
2021	Gallatin	Big Sky	Brown Trout	351	270	431
2024	Gallatin	Big Sky	Brown Trout	238	188	288
2021	Gallatin	Big Sky	Rainbow Trout	2438	1996	2880
2024	Gallatin	Big Sky	Rainbow Trout	2814	2426	3201

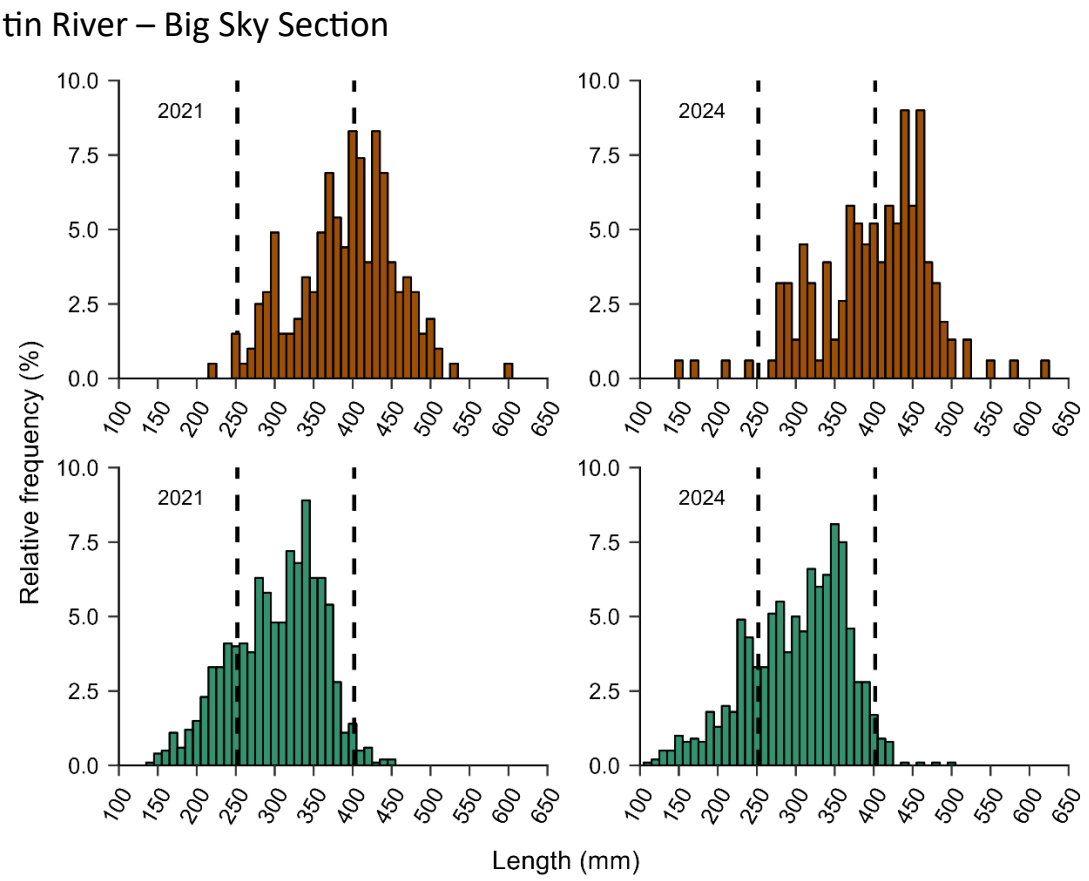

Figure 8. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Big Sky section of the Gallatin River in 2021 and 2024. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

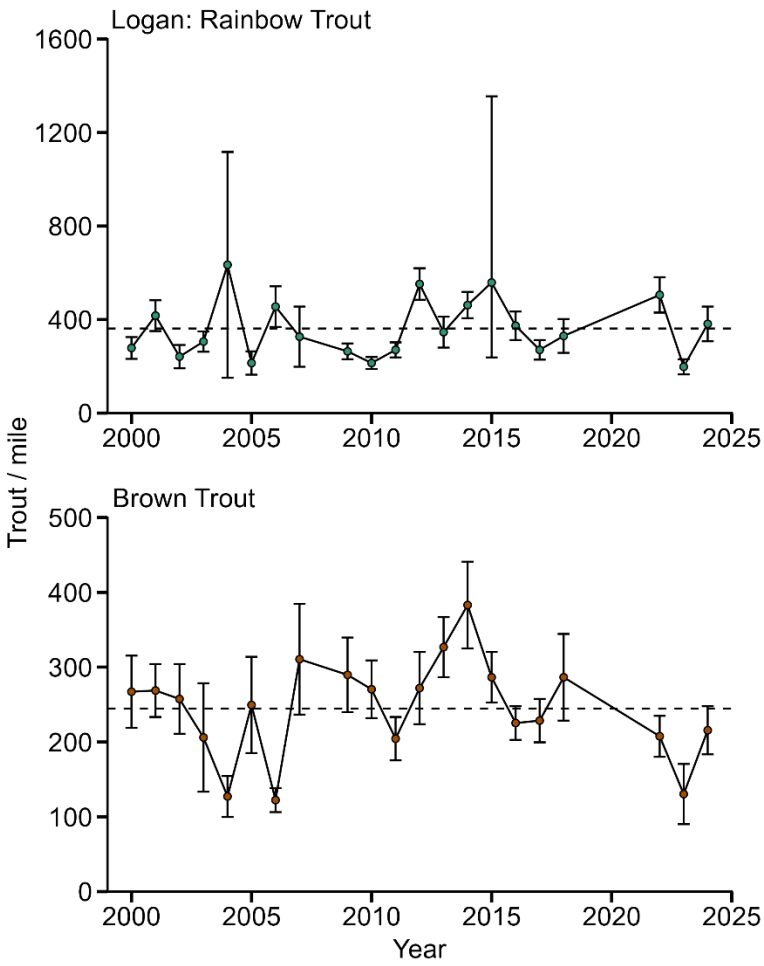

Figure 9. Estimated abundances of Rainbow (green triangles) Brown Trout (brown circles) and ≥ 152 mm (≈ 6“) in the Logan section of the Gallatin River. Dashed lines represent the long-term average trout abundances (1999 to 2024), and error bars represent 95% confidence intervals.

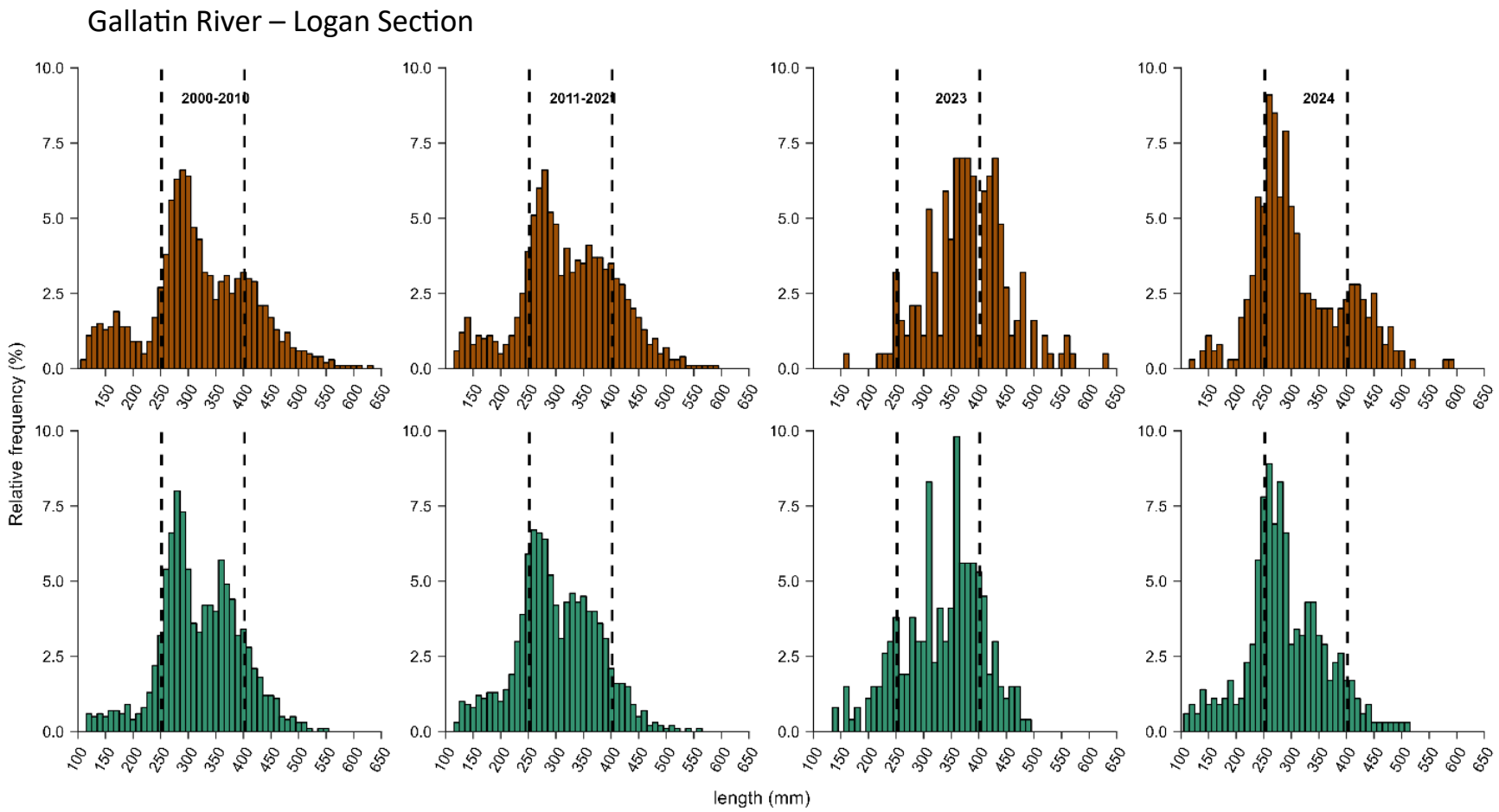

Figure 10. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Logan section of the Gallatin River. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

East Gallatin River

Hoffman

The Hoffman section was historically sampled in the Fall; however, we transitioned to spring sampling in 2024 to avoid low-discharge conditions. Brown and Rainbow Trout densities therefore represent the status of the populations, but inferring trends from these data will require at least two more years of sampling. We estimated 461 Brown Trout/mile and 1244 Rainbow Trout/mile in the Hoffman section in 2024 (Table 6). Estimates were lower for both species in 2024 than in 2020; this could be a result of lower densities or behavioral differences between the species between seasons (Pope and Willis 1996). For example, Brown Trout estimates may have been higher because of spawning migrations from downstream sources (Colton Pipinich, FWP, Personal Communication). Furthermore, estimates may reflect a decline in Rainbow Trout densities, or they may have been lower because of outmigration from the sample section during spring spawning migrations. Length frequencies of Brown and Rainbow Trout show a relatively stable population structure (Figure 11); however, consecutive sampling of this section in the spring will help us characterize these population trends more accurately.

Thompson

Densities of Brown Trout in the Thompson section have been relatively stable from 2001 to 2024 whereas Rainbow Trout densities have varied (Figure 12). We observed a decline in Rainbow Trout densities from 1102 trout/mile in 2022 to 640 trout/mile in 2024. Similarly, we observed slight declines in Brown Trout densities from 314 trout/mile in 2022 to 237 trout/mile in 2024 (Figure 10). Length frequencies of both species show a consistent, relative lack of recruitment and survival of larger size classes in this section over the past 20 years (Figure 13). This section of river is heavily influenced by irrigation return flows and excess fine sediments. In drought years, reduced discharge and elevated water temperatures likely affect adult survival and juvenile recruitment (Catanneo et al. 2002; Jonsson and Jonsson 2010).

Table 6. Brown (LL) and Rainbow Trout (RB) density estimates (trout/mile) and 95% confidence intervals in the Hoffman section of the East Gallatin River in 2020 and 2024. Estimates include trout ≥ 152 mm.

Year	River	Section	Species	Trout/mile	95% LCI	95% UCI	Season
2020	East Gallatin	Hoffman	LL	1257	977	1536	Fall
2024	East Gallatin	Hoffman	LL	461	280	643	Spring
2020	East Gallatin	Hoffman	RB	1709	1501	1917	Fall
2024	East Gallatin	Hoffman	RB	1244	825	1663	Spring

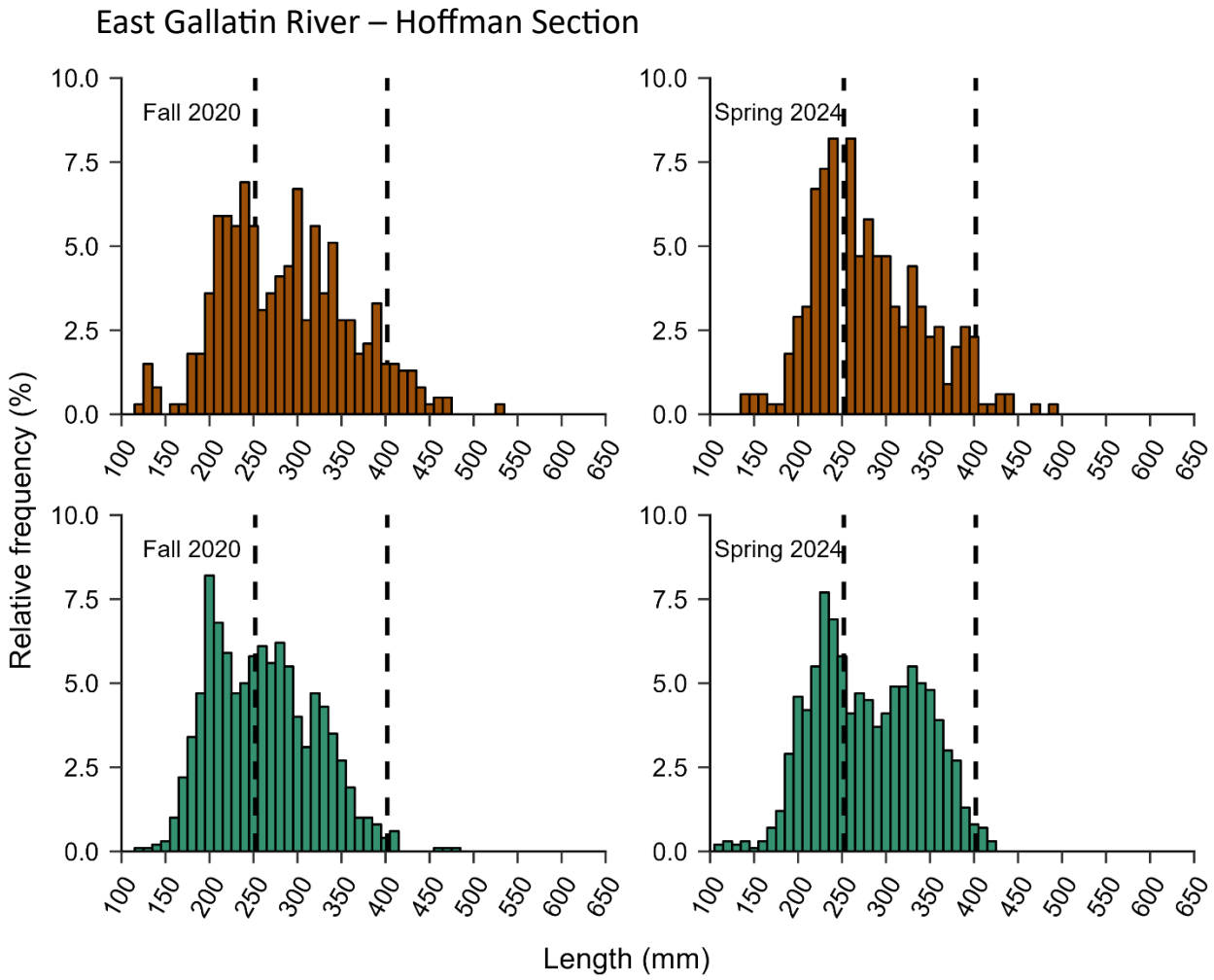

Figure 11. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Hoffman section of the East Gallatin River in 2020 and 2024. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

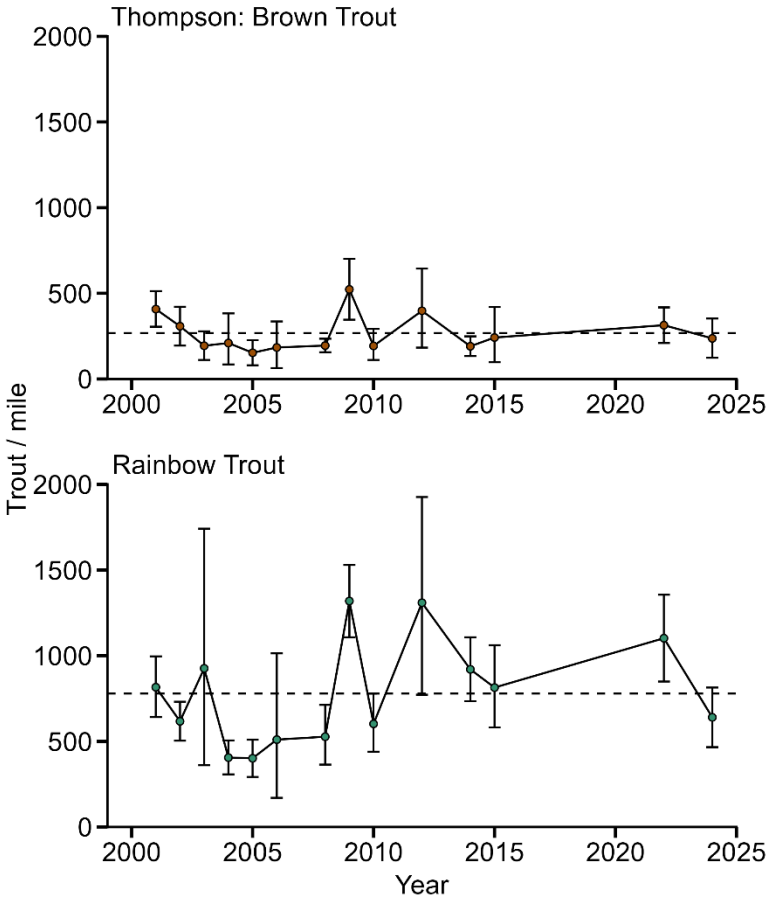

Figure 12. Estimated abundances of Brown (brown circles) and Rainbow trout (green triangles) ≥ 152 mm (~ 6“) in the Thompson section of the East Gallatin River. Dashed lines represent the long-term average trout abundances (2001 to 2024), and error bars represent 95% confidence intervals.

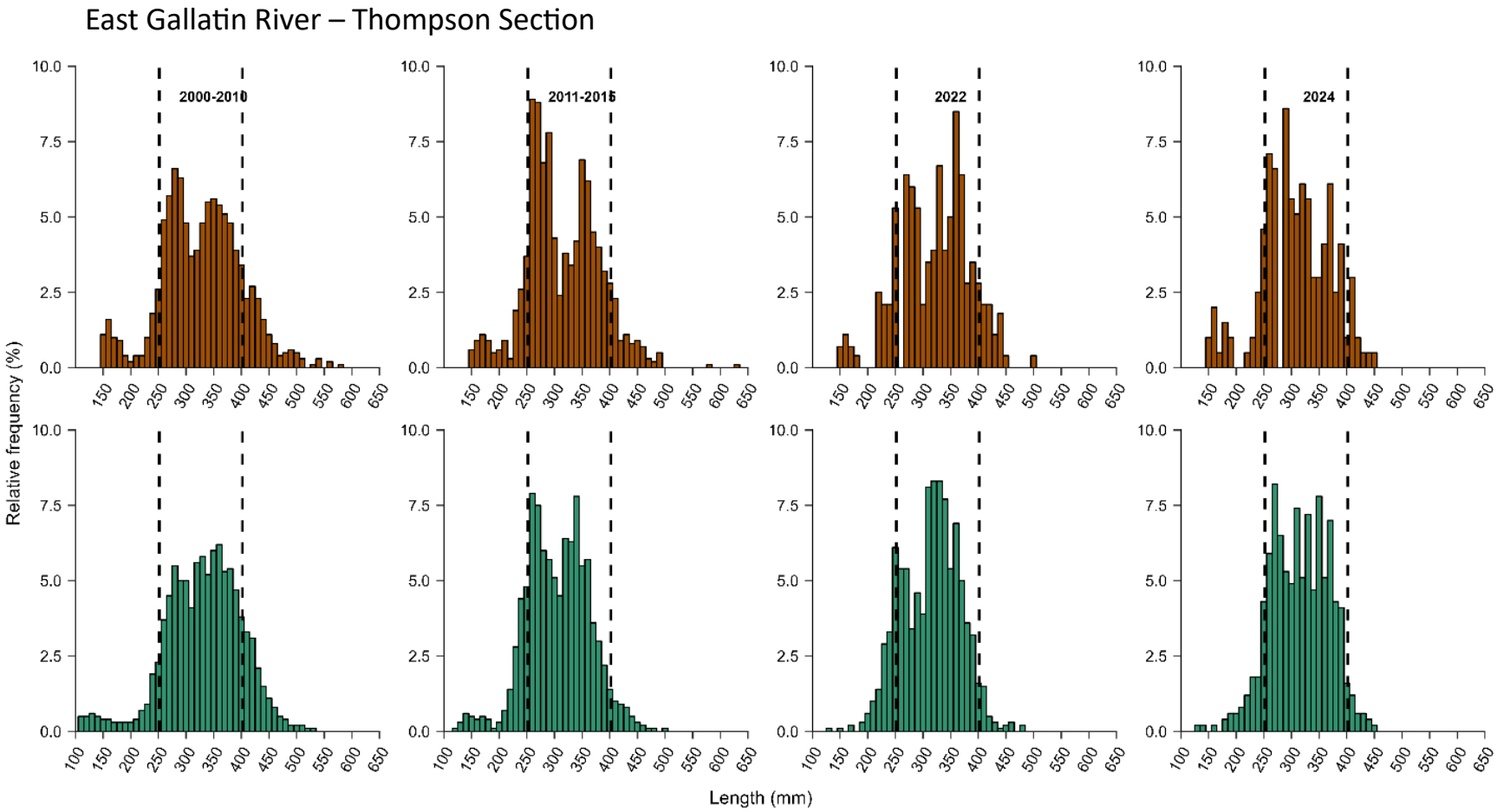

Figure 13. Length frequency histograms of Brown (brown bars; top row) and Rainbow Trout (green bars; bottom row) ≥ 152 mm (≈ 6”) captured in the Thompson section of the East Gallatin River. Sampling did not occur from 2016 to 2021. Black dashed lines delineate 252 mm (≈10”) and 406 mm (≈ 20”).

Lake and Reservoir Sport Fisheries Monitoring

Hebgen Resevoir

The mean catch-per-unit-effort (CPUE) of total trout in Hebgen Reservoir appears stable or slightly decreasing. Standardized gillnetting shows a decrease in CPUE from 23 trout/net in 2023 to 21 trout/net in 2024 and remains above the long-term average of 19 trout. The CPUE of Brown Trout decreased from 17.25 trout/net in 2023 to 16.75 trout/net in 2024 but still exceeds the management goal of 15.5 brown trout/net (Figure 14). Rainbow Trout CPUE decreased from 6 trout/net in 2023 to 4.2 trout/net in 2024 which remains below the management goal of 7.5 Rainbow Trout/net. The mean length of Brown Trout increased from 456 mm in 2023 to 466 mm in 2024, remaining above than long-term average of 446 mm. The mean length of Rainbow Trout increased from 404 mm in 2023 to 426 mm in 2024, which is above long-term average of 405 mm. Eighty five percent of the Brown Trout captured in gill nets were ≥ 406 mm, and 56 % of the Rainbow Trout captured were ≥ 406 mm (Figure 15).

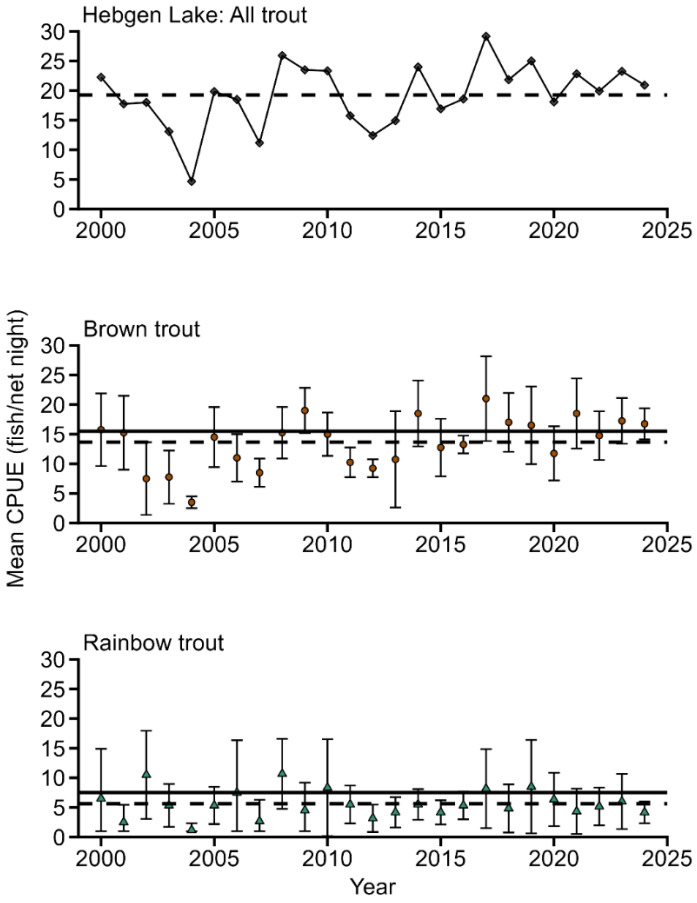

Figure 14. Mean catch-per-unit-effort (CPUE) of all trout combined (black diamonds), Brown (brown circles) and Rainbow Trout (green triangles) captured in Hebgen Reservoir from 2000 to 2024. Catch-per-unit-effort was calculated using catches from floating and sinking nets. Brown Trout CPUE was calculated from sinking gill nets, and Rainbow Trout CPUE was calculated from floating gill nets to account for behavioral differences of each species. Solid lines represent management goals, dashed lines represent the long-term average CPUE from 2000 to 2024, and error bars represent standard deviations for each year.

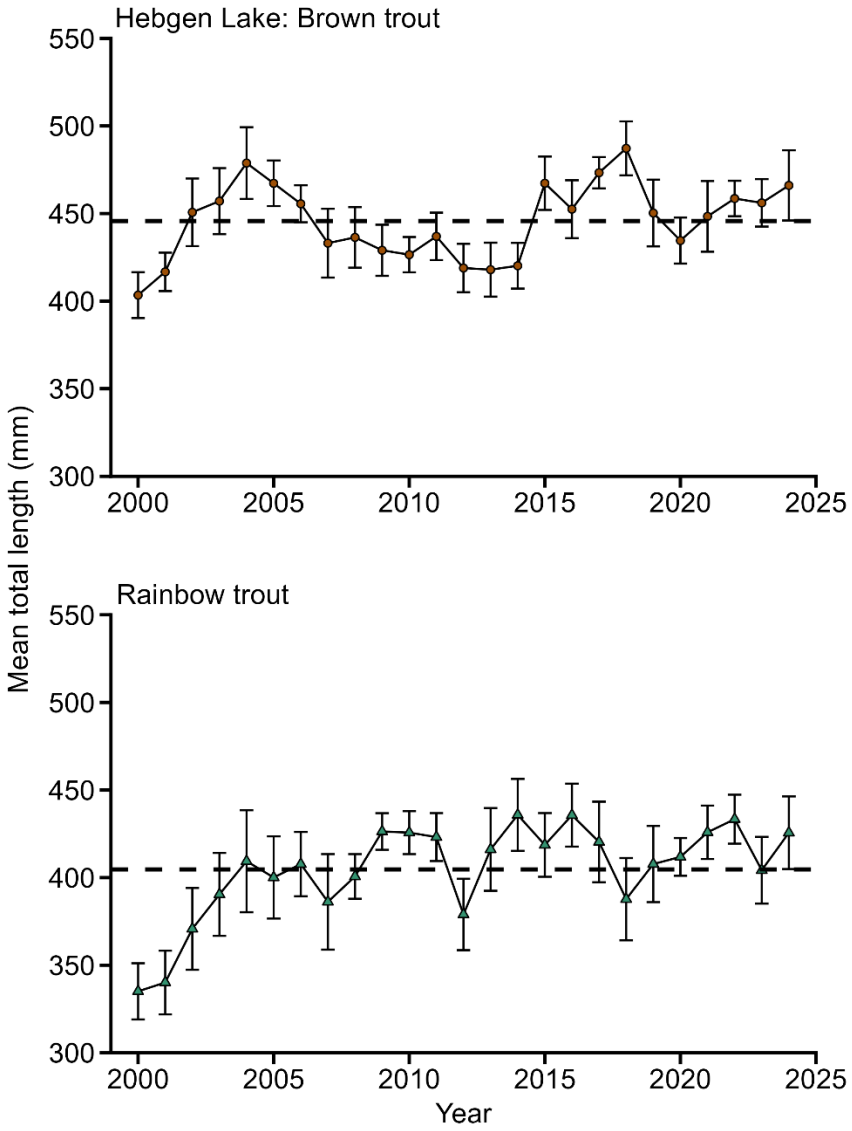

Figure 15. Mean total length (mm) of Brown (brown circles) and Rainbow Trout (green triangles) captured in Hebgen Reservoir from 2000 to 2024. The dashed lines represent the long-term average total length from 2000 to 2024, and error bars represent 95% confidence intervals for each year.

Ennis Reservoir

The mean catch-per-unit-effort (CPUE) of total trout, Brown Trout, and Rainbow Trout were above the long-term averages (Figure 16). Total trout CPUE increased from 13 trout/net in 2023 to 18 trout/net in 2024. The mean total length of brown trout decreased from 430 to 419 mm, exceeding the long-term average of 399 mm. The mean total length of Rainbow Trout decreased from 390 to 370 mm (Figure 17).

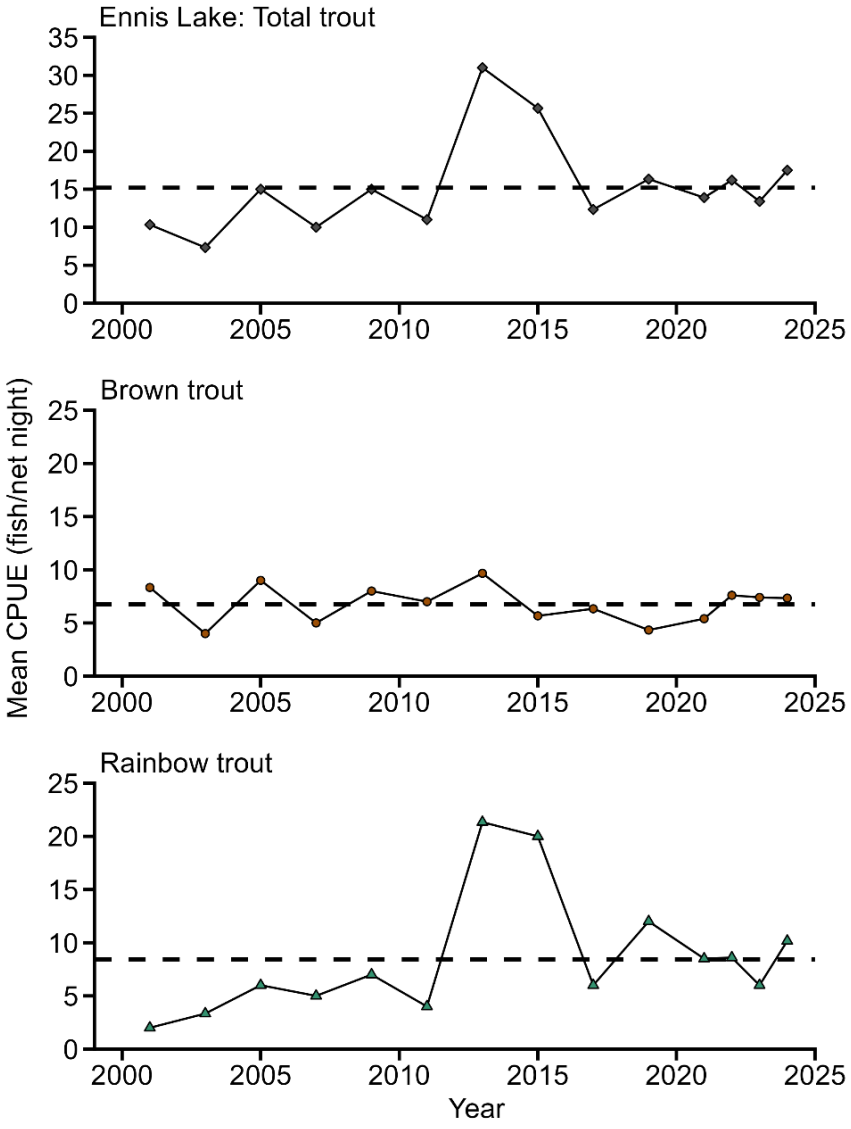

Figure 16. Mean catch-per-unit-effort (CPUE) of total (black diamonds), Brown (brown circles) and Rainbow Trout (green triangles) captured in gill nets set in Ennis Reservoir from 2001 to 2024. Brown and Rainbow Trout mean CPUE and were calculated using all nets set from each year.

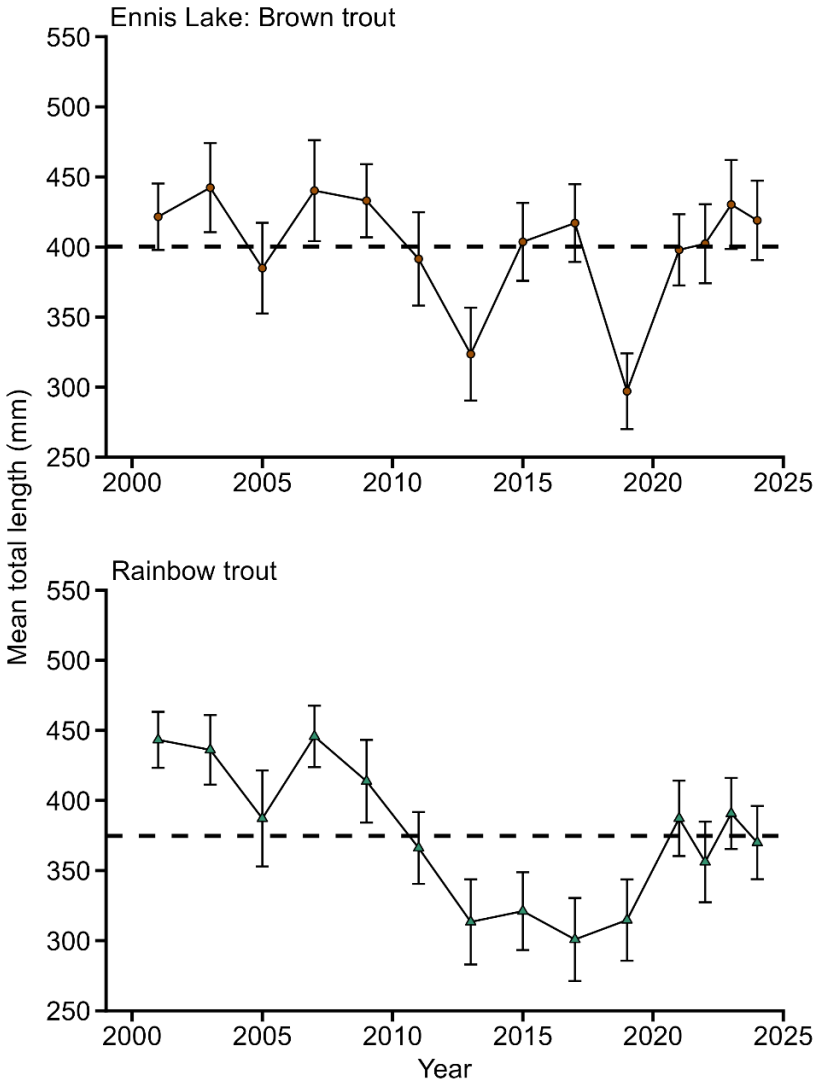

Figure 17. Mean total lengths (mm) of Brown (brown circles) and Rainbow Trout (green triangles) in Ennis Lake from 2001 to 2024. Dashed black lines represent the long-term average total lengths of each species and vertical bars represent the 95% confidence intervals for mean lengths each year.

Wade Lake

Rainbow Trout CPUE is consistently higher for floating nets than sinking nets, whereas Brown Trout CPUE is consistently low for both net types. Average Rainbow Trout CPUE was 5 fish/floating net and 1 fish/sinking net in 2024. We did not catch any Brown Trout in either gillnet type in 2024 (Figure 18). The average length of Rainbow Trout was 16 inches in 2024 and has been relatively consistent since 1988 (Figure 19).

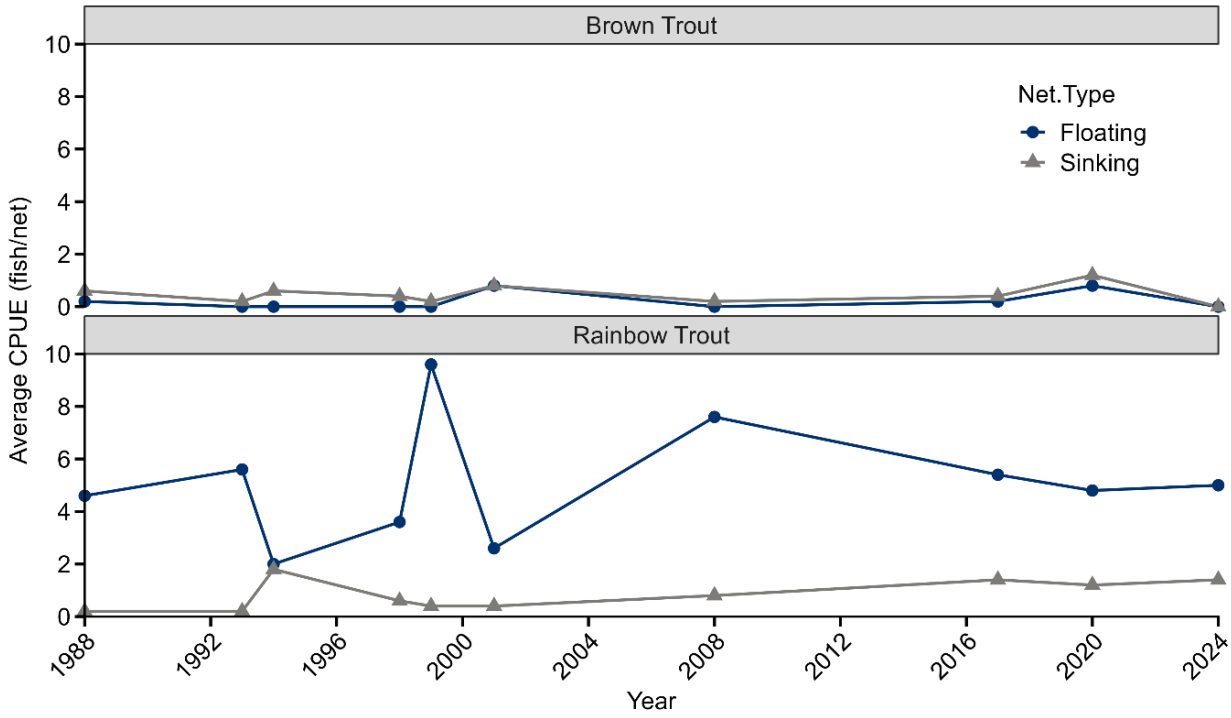

Figure 18. Average CPUE of Brown Trout and Rainbow Trout caught in floating (blue circles) and sinking (gold triangles) nets in Wade Lake from 1988 to 2024.

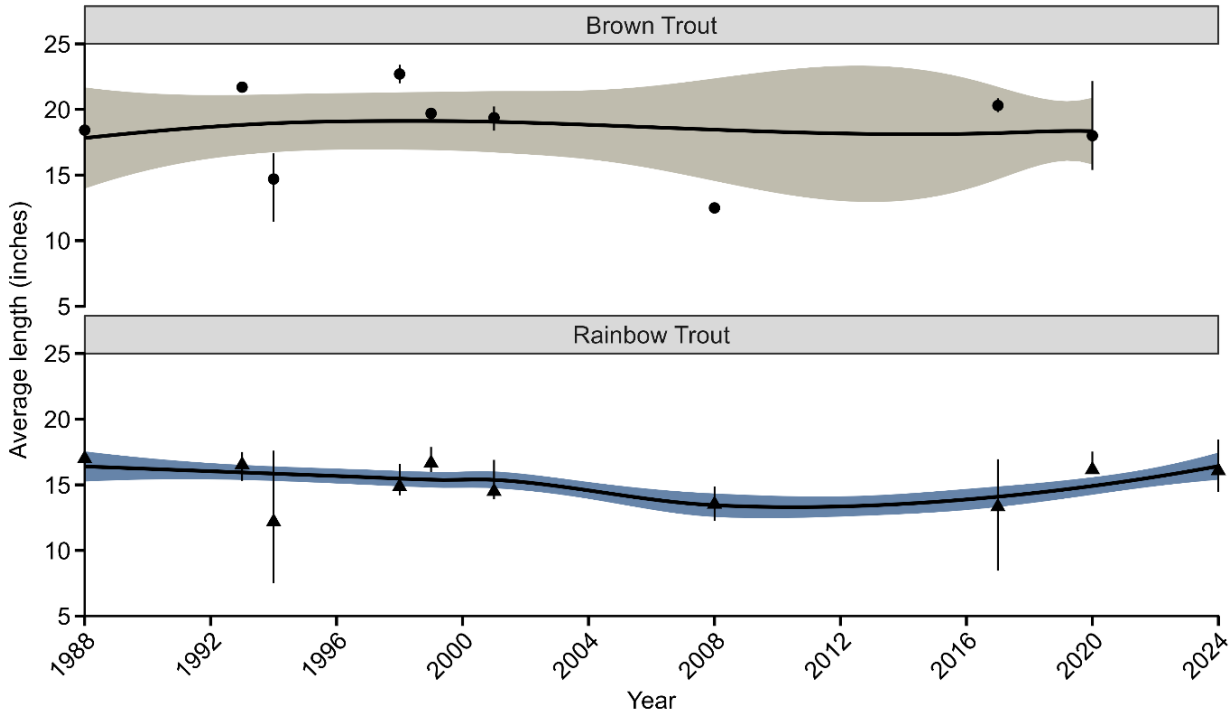

Figure 19. Average lengths of Brown Trout (circles) and Rainbow Trout (triangles) captured by gillnetting in Wade Lake from 1988 to 2024. Points represent the average, and bars represent the 25th and 7th quantiles. Horizontal ribbon lines show the smoothed trends with 95% confidence intervals of average lengths over time.

Hyalite Reservoir

The average CPUE increased for all species in Hyalite Reservoir from 2023 to 2024. Yellowstone Cutthroat Trout CPUE increased from 12 fish/net in 2023 to 21 fish/net in 2024, and since the cessation of stocking Yellowstone Cutthroat Trout in 2019, has consistently exceeded the average CPUE observed from 2011 to 2018 (Figure 20). Furthermore, the average length of Yellowstone Cutthroat Trout shows a slight increasing trend (Figure 21). Brook Trout CPUE increased from 8 fish/net in 2023 to 9 fish/net in 2024 (Figure 20), and the average length of Brook Trout has been stable since 2011 (Figure 21). The first White Sucker was captured in Hyalite Reservoir in 2020; since then, we have seen a consistent increase in White Sucker CPUE (Figure 20). The mechanism for the White Sucker introduction is currently unknown.

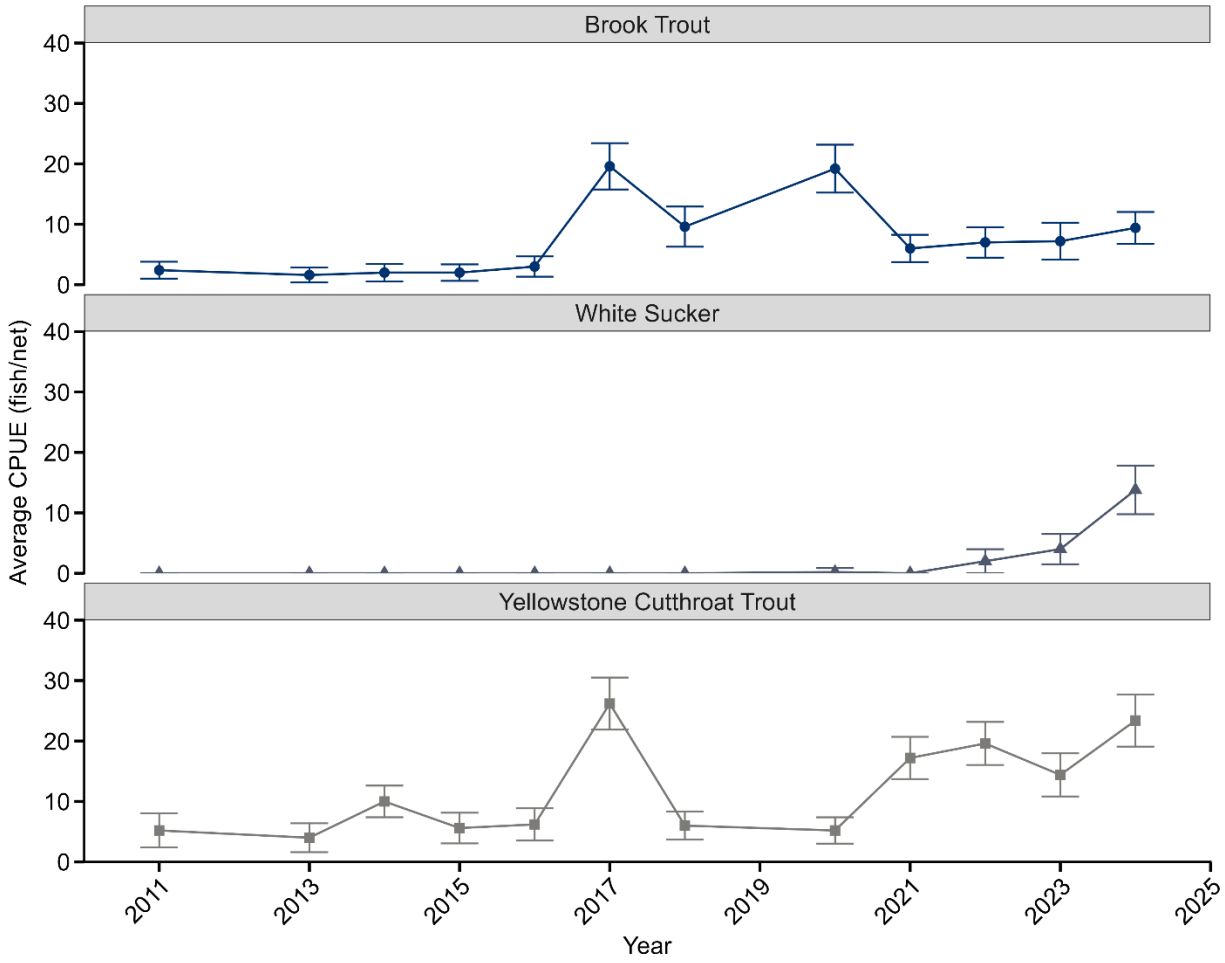

Figure 20. Average CPUE of Brook Trout (blue circles), White Sucker (dark grey triangles), and Yellowstone Cutthroat Trout (light grey squares) in Hyalite Reservoir from 2011 to 2024. Vertical bars represent the standard deviation.

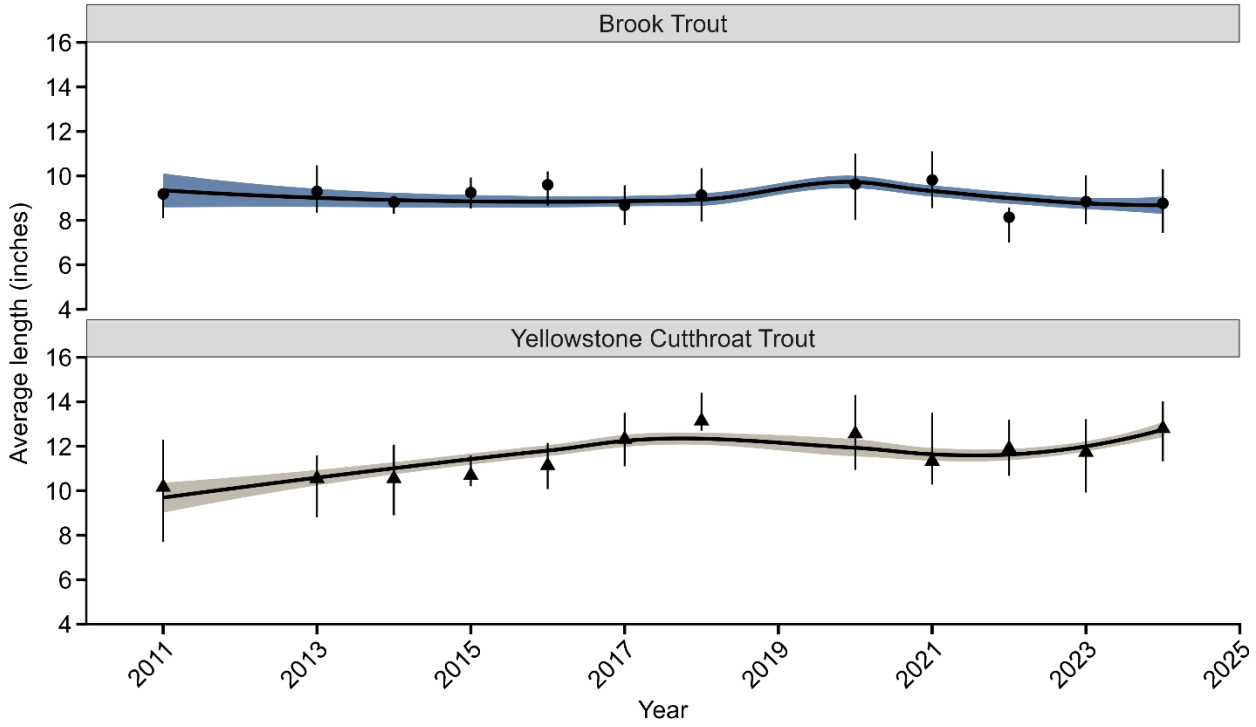

Figure 21. Average lengths of Brook Trout (circles) and Yellowstone Cutthroat Trout (triangles) captured by gillnetting in Hyalite Reservoir from 2011 to 2024. Points represent the average, and bars represent the 25th and 7th quantiles. Horizontal ribbon lines show the smoothed trends with 95% confidence intervals of average lengths over time.

Fish Stocking Summaries

Montana Fish, Wildlife & Parks stocks several lakes and ponds in the Madison and Gallatin drainages to provide sport fishing opportunities supplemental to our wild fisheries. Lake and pond stocking is prioritized by public access, lack of suitable spawning habitat for natural reproduction, and availability of hatchery fish. We stocked 23 lakes and ponds in 2024 (Table 7).

Table 7. Summary of 2024 fish stocking efforts in the Madison and Gallatin drainages.

County	Waterbody	Date	Species	Number
Gallatin	Big Bear Lake	10/16/24	Westslope Cutthroat Trout	500
Gallatin	Bozeman Pond	9/24/24	Rainbow Trout	600
Gallatin	Bozeman Pond	5/9/24	Rainbow Trout	600
Gallatin	Cattail Pond	6/6/24	Rainbow Trout	700
Gallatin	Elk Grove Pond	6/25/24	Rainbow Trout	500
Gallatin	Glen Lake	9/24/24	Rainbow Trout	1000
Gallatin	Glen Lake	5/9/24	Rainbow Trout	1000
Gallatin	Regional Parks Pond	6/6/24	Rainbow Trout	1000
Gallatin	Regional Parks Pond	6/4/24	Rainbow Trout	300
Gallatin	Valley West Pond	6/6/24	Rainbow Trout	500
Madison	Cedar Lake	9/19/24	Westslope Cutthroat Trout	1800
Madison	Cliff Lake	9/19/24	Westslope Cutthroat Trout	1000
Madison	Expedition Lake	9/19/24	Westslope Cutthroat Trout	500
Madison	High Hope Lake	9/19/24	Westslope Cutthroat Trout	150
Madison	Hilgard Lake	9/19/24	Westslope Cutthroat Trout	500
Madison	Lake Ha Hand	9/19/24	Westslope Cutthroat Trout	500
Madison	Lupine Lake	9/19/24	Westslope Cutthroat Trout	500
Madison	Painted Lake	9/19/24	Westslope Cutthroat Trout	500
Madison	Ramona Lake	9/19/24	Westslope Cutthroat Trout	1000
Madison	Sawlog Lake	9/19/24	Westslope Cutthroat Trout	500
Madison	Sunset Lake	9/19/24	Westslope Cutthroat Trout	500
Madison	Lower Sureshot Lake	9/19/24	Westslope Cutthroat Trout	1000
Madison	Upper Twin Lake	7/8/24	Arctic Grayling	300

Mountain Lakes Surveys

Montana Fish, Wildlife & Parks manages mountain lake fisheries for recreational angling opportunities and native species conservation and brood stocks. Crews sampled three mountain lakes in 2024 to assess the size structure of the trout populations by gillnetting and angling.

Heather Lake contains Yellowstone Cutthroat Trout that were last stocked in 2021. Size structure of the population ranged from 12.8 inches to 14.5 inches (Table 8). Rat Lake supports a wild, self-sustaining population of Rainbow Trout and Yellowstone Cutthroat Trout hybrids. Stocking Rainbow Trout ceased in 1989. There was a one-time stocking of Yellowstone Cutthroat Trout in 1980. A windmill was installed by the United States Forest Service to maintain aeration during the winter to prevent winter mortality of trout. We caught one Rainbow Trout × Yellowstone Cutthroat Trout hybrid in Rat Lake in 2024 (Table 8). Upper Sureshot Lake contains Brook Trout from relic stocking efforts at an unknown time. The size structure of the population is small, ranging from 6.5 inches to 9.3 inches, indicating the population is likely stunted and requires population control (Table 8).

Table 8. Summary of mountain lake surveys conducted in 2024.

Year	Waterbody	Species present	# of fish sampled	Average length (inches)	Length range (inches)
2024	Heather Lake	Yellowstone Cutthroat Trout Rainbow Trout ×	18	13.8	12.8 – 14.5
2024	Rat Lake	Yellowstone Cutthroat Trout	1	13.6	NA
2024	Upper Sureshot Lake	Brook Trout	34	7.4	6.5 – 9.3

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