Golden Perch (*Macquaria ambigua*)

Stock Structure and Biology

Golden Perch occurs throughout most of the Murray–Darling system of south-eastern Australia, with the exception of the upper reaches of some tributaries. In Victoria the golden perch population is considered to comprise a state-wide stock that occurs in the lower sections of river catchments north of the Great Dividing Range (Figure 128). Phylogenetic analyses based on mitochondrial DNA suggests golden perch in the Murray-Darling basin (including Victorian waters) represents one monophyletic clade (Faulks *et al.* 2010). Golden Perch have been translocated into waters outside their natural range, including the Wimmera River and lakes in western Victoria (Figure 128). Hatchery-bred juvenile golden perch are also stocked into selected waters, mainly within its natural range and mainly within impoundments, to maintain and enhance the recreational fishery (Figure 128). Golden Perch completes its lifecycle solely within freshwater. Spawning in Victoria occurs mainly in spring and early summer (October to February), usually in association with elevated temperatures and increasing water flow and flooding. Populations in rivers are sustained by both natural recruitment and stocking whereas populations in impoundments are sustained by stocking only. Maturity occurs at about 4 years (>1.5 kg) for females and 3 years for males. Golden Perch supports a highly valuable and popular recreational fishery. There is no commercial harvest of golden perch in the state. The recreational fishery is managed through strict recreational bag and size (slot) limits, restrictions on fishing methods such as set lines and supplementation by stocking hatchery-bred fish.

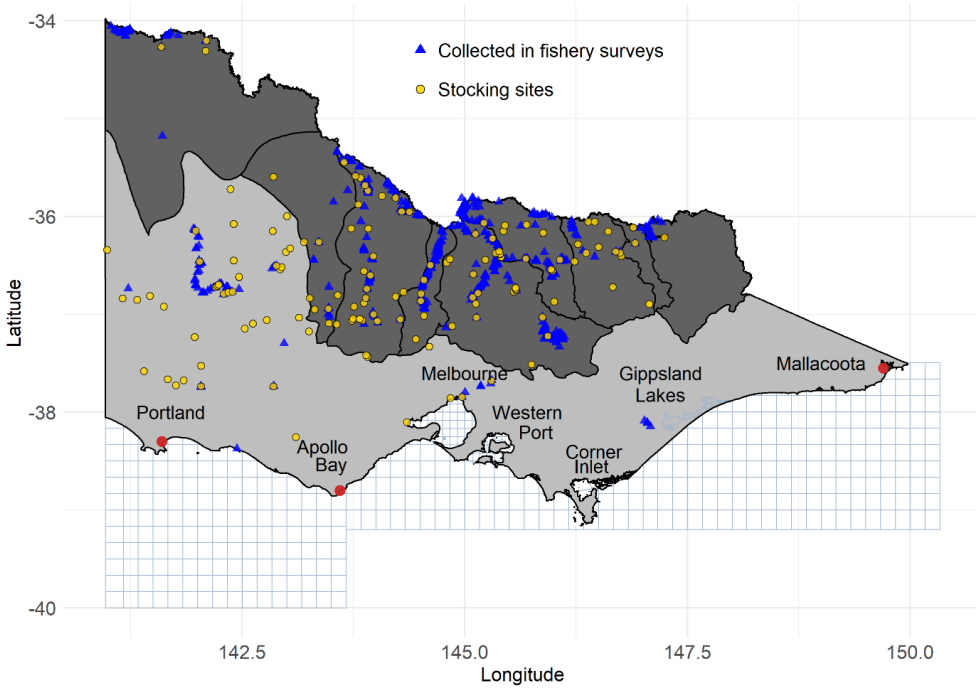

Figure 128 Victorian golden perch distribution and stocking sites.

Assessment Summary

In the absence of consistent, long-term estimates or population abundances and harvest by anglers, the status of the Victorian golden perch stock and associated fisheries were evaluated using:

- Nominal catch estimates (fish per machine minute) and length composition from fishery-independent (electrofishing) surveys of six indictor riverine populations (Broken Creek and River, Campaspe River, Goulburn River, Gunbower Creek, Loddon River and Wimmera River) (Conron *et al. 2020,* Ingramand Lieschke 2023) (reference period first record since 1990–2015).

This assessment found:

- *Fishing pressure* – commercial harvest of golden perch in Victoria ceased in 2001. There is no recent information on recreational harvest or effort at state level.
- *Biomass* – In recent years, electrofishing survey catch per unit effort (CPUE; number of fish per machine minute) has increased in five indicator rivers (Broken Creek and River, Campaspe River, Goulburn River, Loddon River and Gunbower Creek), and declined in one river (Wimmera River), the CPUE of which was below the average CPUE for the reference period (1996–2015) for the recent three years (Figure 129). The CPUE for the Goulburn River and Gunbower Creek have been above the average for the reference period since the early 2010s, for the Campaspe River and Broken Creek and River, Goulburn River since the mid-2010s and for the Loddon River since the late 2010s.
  All six indicator rivers are stocked annually with hatchery-bred juveniles, which may be masking natural recruitment. Regular stockings into the Campaspe, Goulburn and Loddon rivers are making a substantial contribution to populations (Ingram *et al*. 2015, Tonkin *et al*. 2019). All golden perch sampled from the Campaspe River above Rochester were stocked and the majority of fish sampled from the Goulburn and Loddon rivers were stocked (Tonkin *et a*l. 1919). There is no information available to determine if stocked fish are contributing to fisheries in the Broken Creek and River, Gunbower Creek, Loddon River and Wimmera River.
- *Length compositions* – Long-term length composition data for electrofishing surveys is limited for much of the assessment (Figure 130). Most fish measured were above the LML whereas small fish (recruits presumed to be less than one year old and <10 cm) were uncommon (and absent in some years) in all rivers (Figure 130, Figure 131) . Small fish that were present may indicate recent stockings of hatchery-bred fish (all rivers are stocked annually), but some fish may also be from natural recruitment (Figure 131). Mature fish (> 30 cm) were common and present in all rivers in recent years (Figure 131).

Stock status summary: As there is no consistent, long-term estimates of population abundances and recreational harvest for golden perch, state-wide stock status was based on assessment of six indicator riverine populations (Broken Creek and River, Campaspe River, Goulburn River, Gunbower Creek, Loddon River and Wimmera River). Although information from these rivers is limited to infrequent and irregular annual electro-fishing surveys, CPUE appears to be increasing in five rivers and declining in one river. All rivers are stocked annually. There is no information on fishing pressure, biomass and size composition for golden perch in impoundments but these populations are largely sustained by stocking hatchery-bred fish rather than natural recruitment. On the basis that CPUE appears to be increasing in five of six indicator rivers it is anticipated that the golden perch stock will progressively improve under favourable environmental conditions.

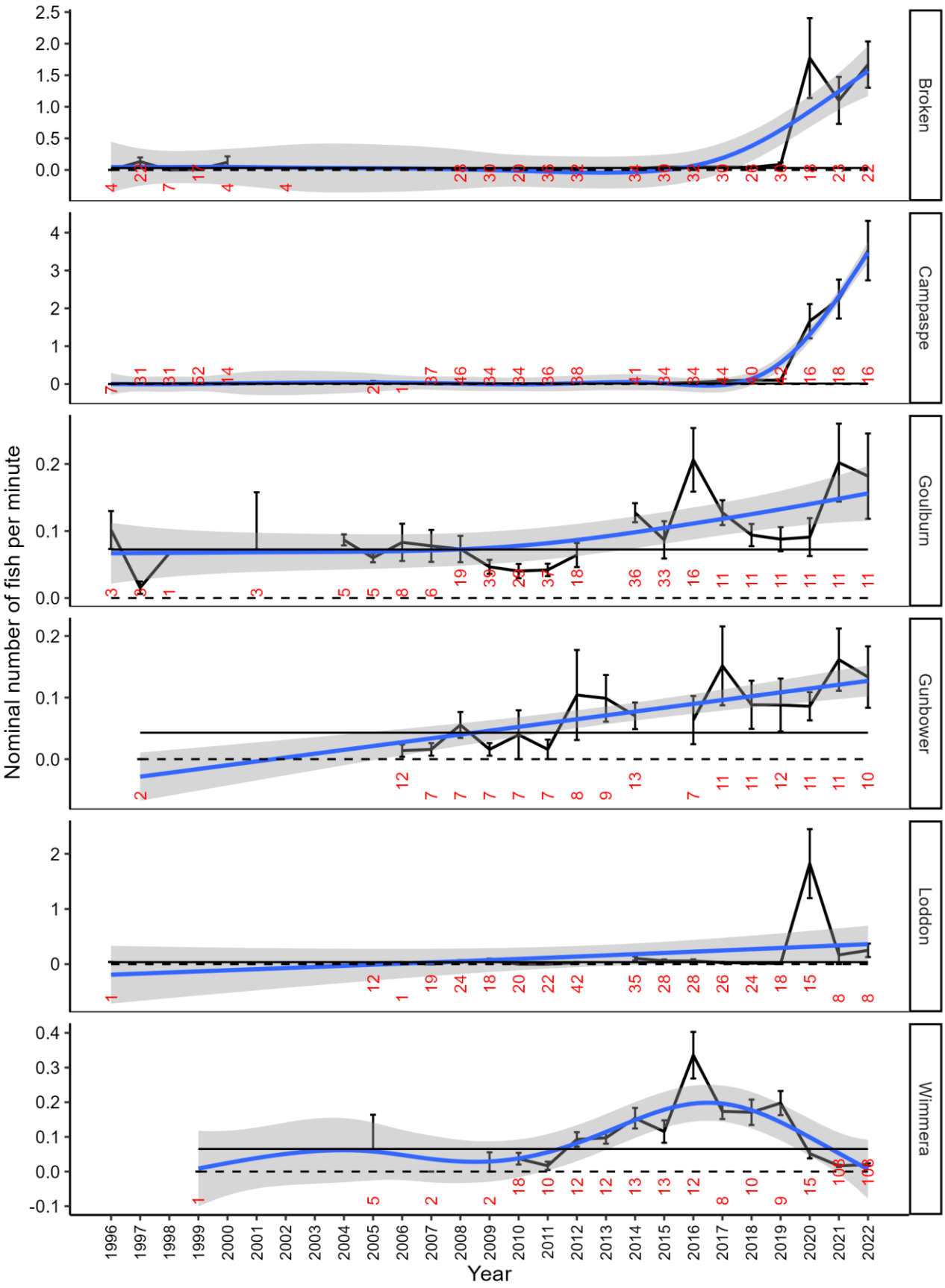

Figure 129 Electrofishing fishery survey catch-per-unit-effort (CPUE) (nominal) for golden perch in six indicator rivers. Horizontal black dashed line is the mean nominal CPUE during the reference period (first record since 1996 to 2022) and the dashed black line is the minimum CPUE within the reference period. Blue line is a generalised additive model (GAM) of the nominal CPUE trend with the shaded grey area representing the 95% confidence interval of the GAM. Red numbers along x-axis are numbers of sites surveyed each year.

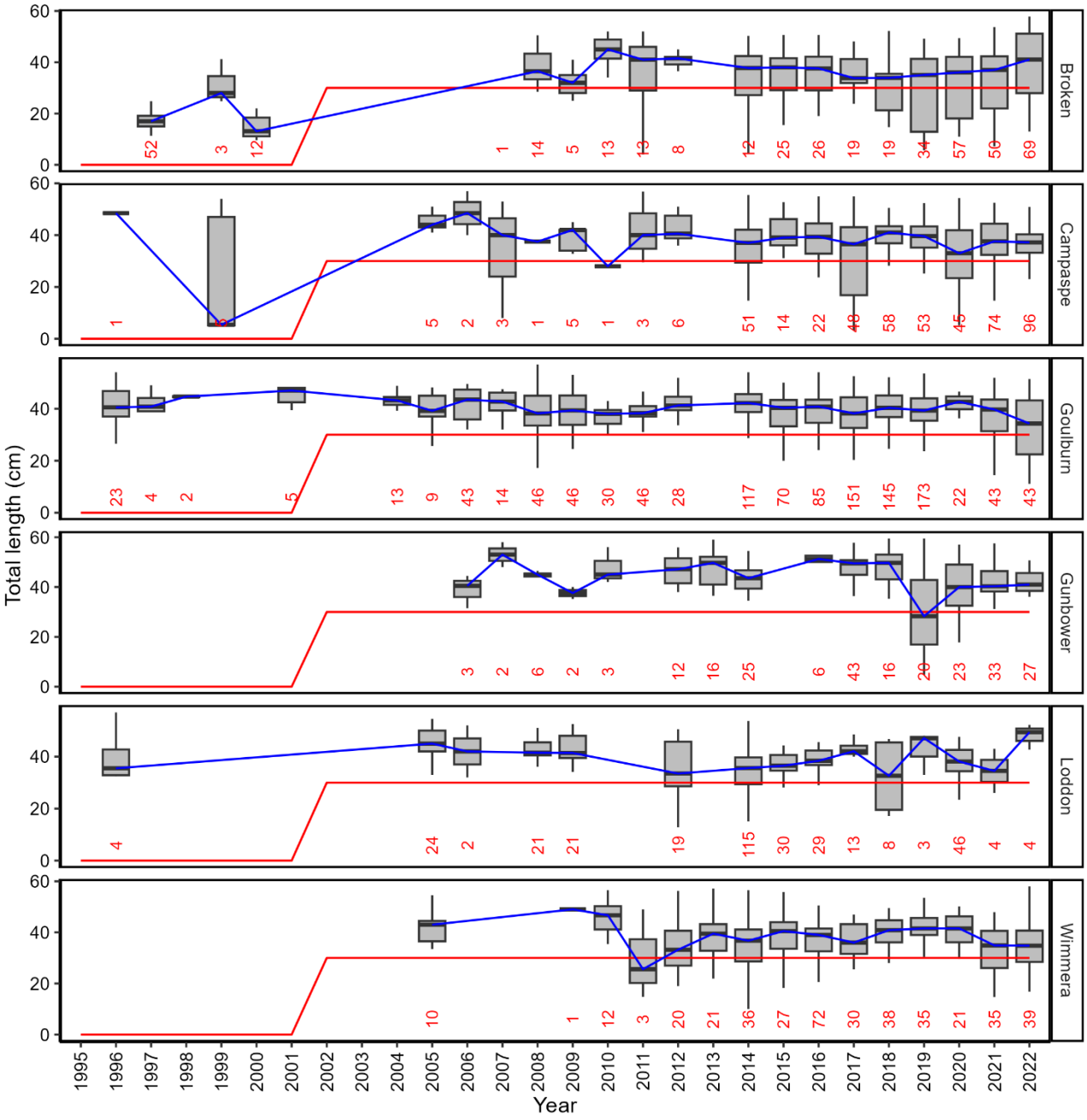

Figure 130 Box-plots of golden perch electro-fishing survey length composition 1995-2022 for six indicator rivers. Red numbers on X-axis indicate number of fish sampled. Blue line = median length, red line = LML.

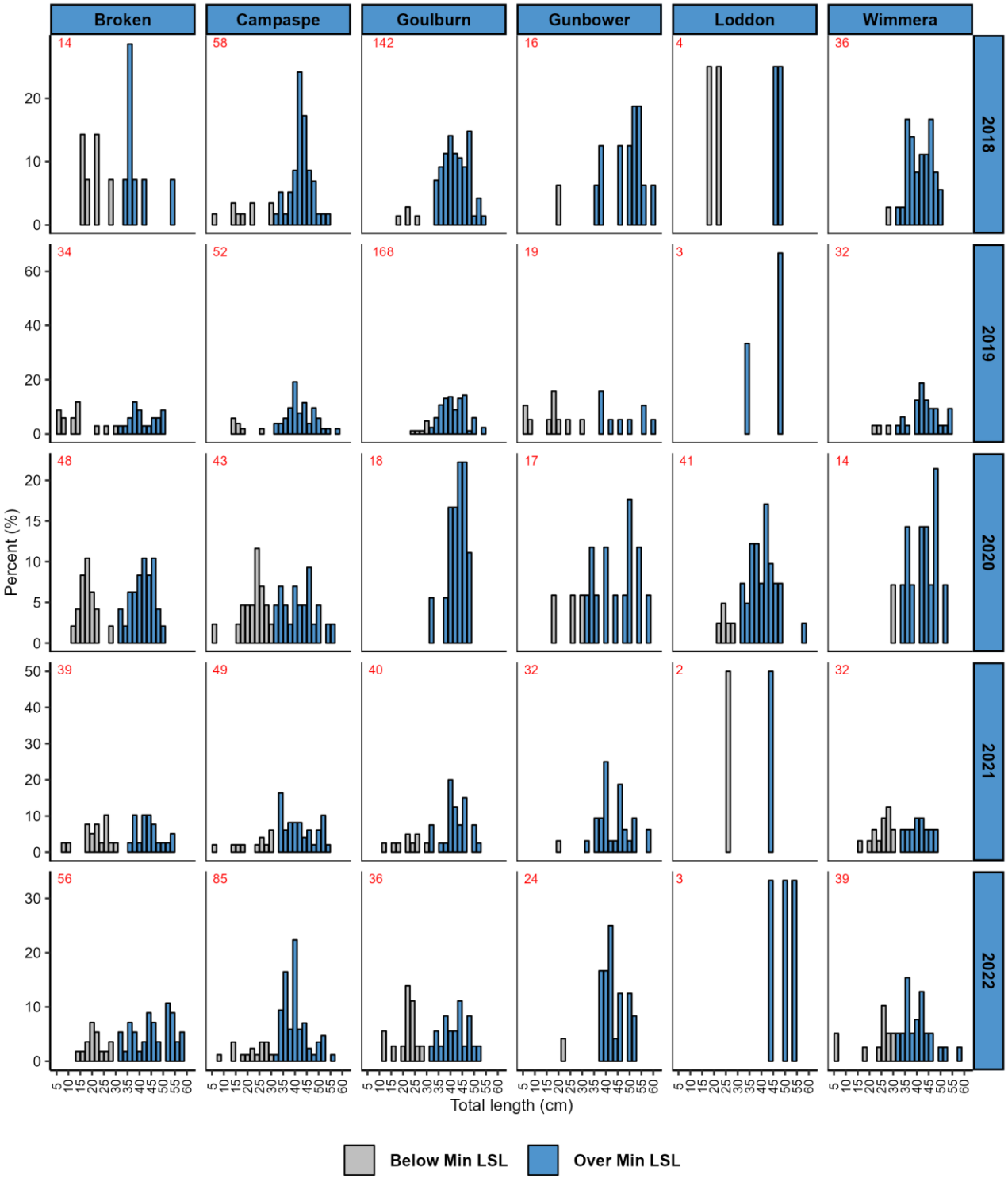

Figure 131 Length frequency histograms of golden perch electro-fishing survey catches from 2018–2022 for six indicator rivers. Red numbers indicate number of fish measured.