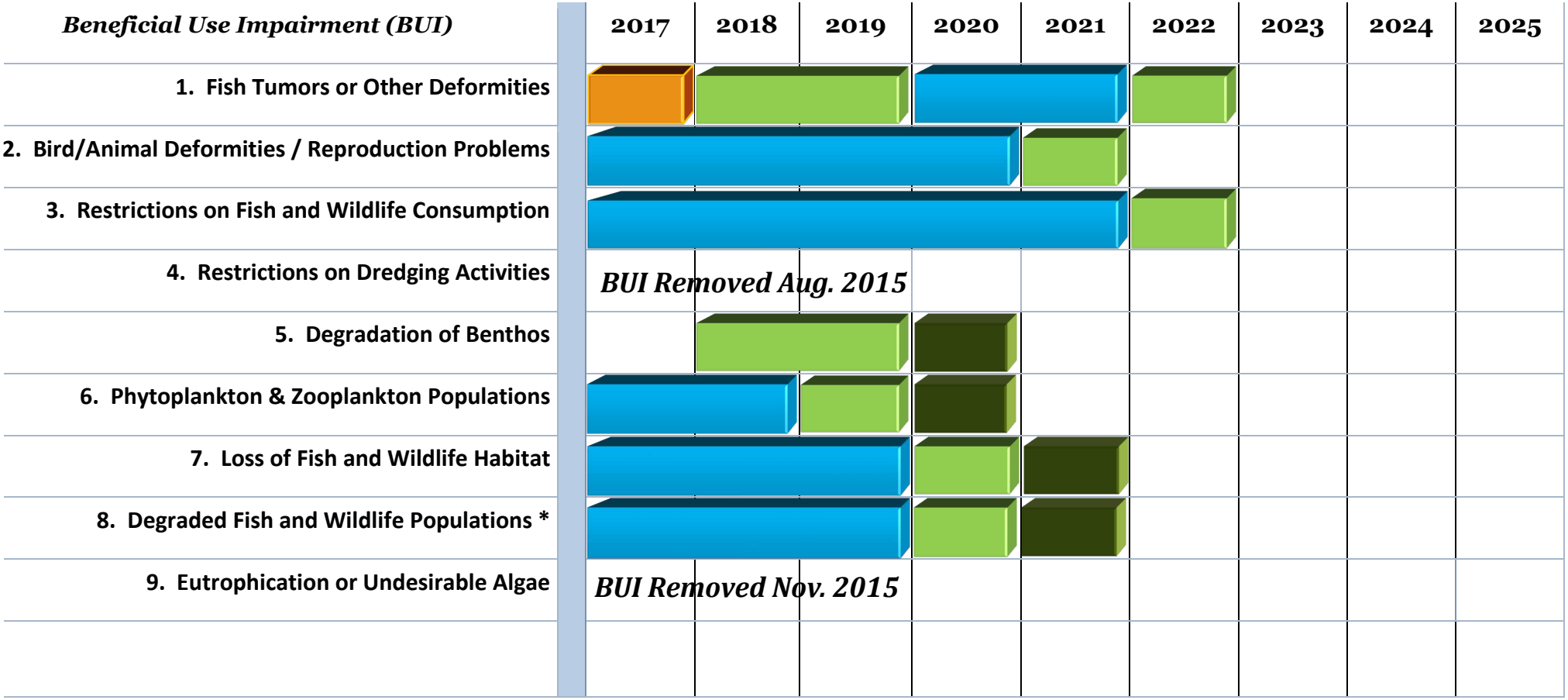
Sheboygan River Area of Concern

Beneficial Use Impairment Removal Timeline

10-30-19



BUI Confirmed Impaired

BUI Assessment

Implementation Underway

BUI Status Check; ie: evaluate monitoring \ assessment data or completion of projects to determine next steps, or if BUI can be considered for removal.

BUI Proposed for Removal

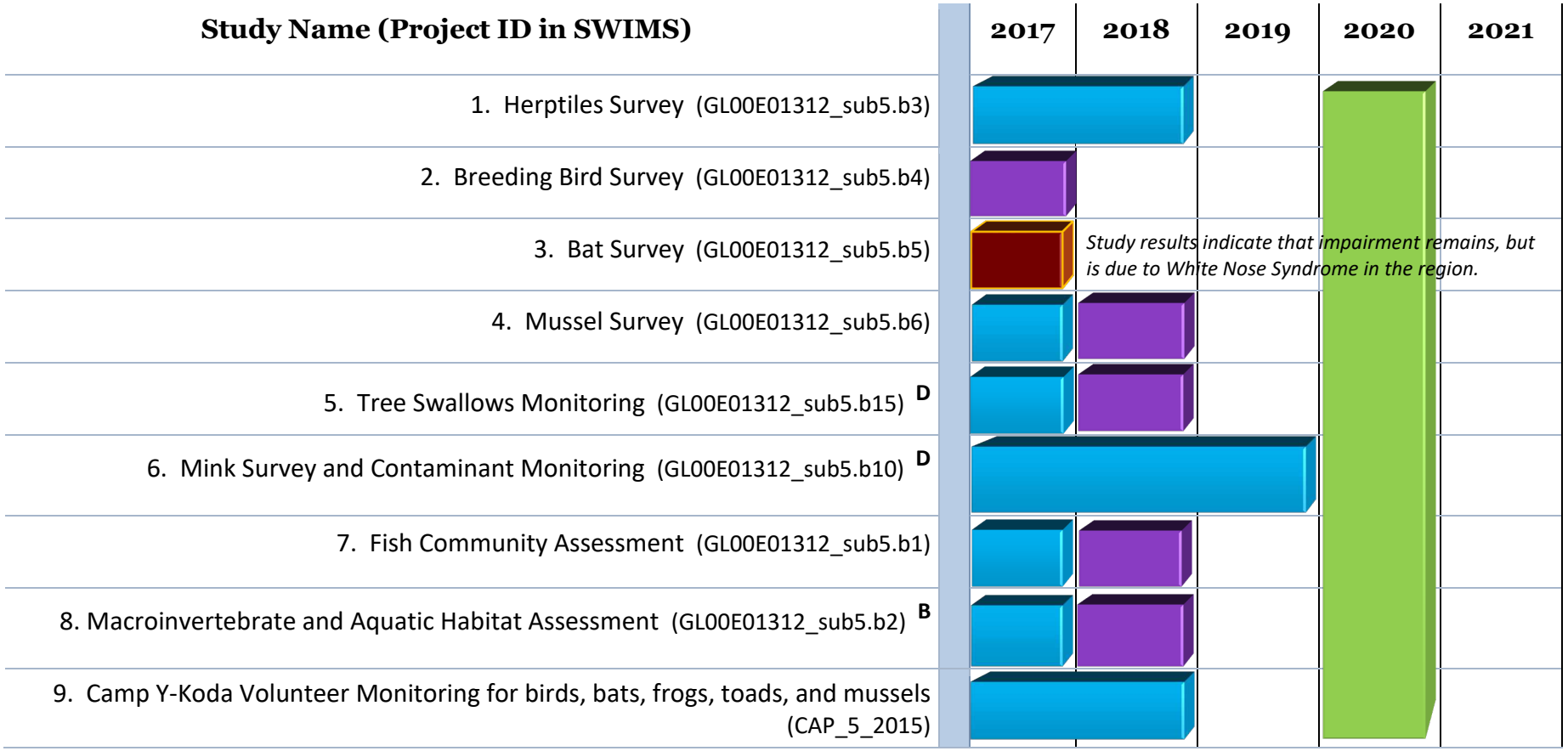
* *For more detail on this BUI, see the Summary of Degraded Fish and Wildlife Populations Verification Studies.*

Projects and Milestones

1. A 2017 fish tumor study confirmed that the impairment still exists. Sampling will be conducted again in 2020-2021.
2. The tree swallow study conducted by the USGS is complete. Initial findings indicate that contaminants were present in tree swallow eggs at elevated levels, but below the lower limit at which egg hatchings begin to be negatively affected. Mink tracking and trapping was attempted from 2014-2016, though no live mink were trapped, requiring the mink study to be continued through 2020. BUI status is expected to be evaluated again in 2021, although this timeline is dependent on the success of future mink sampling efforts.
3. DNR began reassessing waterfowl consumption advisories over a three-year period beginning in 2018. Ducks sampled in 2018 and early 2019 show substantially decreased PCB levels compared with 2011-2012. PCB levels in geese appear unchanged. More waterfowl sampling will be done in 2020. Fish consumption advisories will be assessed again in 2020 and 2021. BUI status will be evaluated again in 2022, following both the fish and waterfowl consumption advisory assessments.
4. Dredging BUI was removed in Aug. 2015.
5. USGS benthos and macroinvertebrate studies are complete and final reports have been published. A USGS report looking at sediment toxicity in the AOC is forthcoming, but preliminary results are positive. All available data on benthic macroinvertebrates, fresh water mussels, and USGS sediment toxicity will be reviewed to make a final determination on proposed removal of the Degradation of Benthos BUI. If targets are met based on available evidence, then this BUI will be proposed for removal in 2020.
6. Final results from USGS plankton studies are completed and BUI removal targets have been met. This BUI will be proposed for removal in 2020.
7. The seven Tier 1 habitat restoration projects outlined in the Fish and Wildlife Plan were completed, and maintenance and monitoring of those projects continued through 2016. Additional three-year studies of aquatic habitat and aquatic macrophytes were completed in 2016. A habitat assessment of the restoration projects was completed in 2019. This BUI will be proposed for removal in 2021.
8. Three-year verification monitoring studies of aquatic habitat and macroinvertebrates were completed in 2016. Repeat verification monitoring surveys for birds, bats, and mussels were also completed in 2016. One repeat verification monitoring study for herptiles was completed in 2018. Verification monitoring for mink began in 2014, but due to small sample size, mink monitoring continued through 2019. Results of populations assessments show improvement for everything except mink. Mink recovery is being addressed in the deformities and reproductive problems BUI. We will propose to remove the populations BUI in 2021 as a joint package with the habitat BUI. For more detail on this BUI, see the summary of Fish and Wildlife Populations Studies.
9. Undesirable algae BUI was removed in November 2015.

10-28-19

Sheboygan River Area of Concern
Degraded Fish & Wildlife Populations Beneficial Use Impairment
Summary of Verification Studies



BUI Assessment in progress (eg: sampling underway, literature review in progress).

Assessment completed. Results indicate population is not impaired.

Overall BUI Status Check; ie: evaluate all verification monitoring & assessment data to determine next steps, or if BUI can be considered for removal.

Assessment completed. Results indicate that impairment remains.

D – also applies to bird & animal deformities BUI.

B – also applies to benthos BUI.

Notes

The decision regarding the removal of the Sheboygan River AOC Degraded Fish and Wildlife Populations BUI will be informed by multiple lines of evidence, gathered through the GLRI-funded studies in the timeline above. Additional notes are provided below.

1. **Herptile survey** Repeat verification monitoring assessments of herptile populations were completed and the final report has been received. The 2018 Sheboygan River AOC herptile inventory successfully followed the proposed and accepted methods in the QAPP and the results suggest that we have begun to achieve the objectives of increased usage of the survey areas by herptile species, in both number of species found and in population sizes of the herptile species found in comparison to the 2011 survey.
2. **Breeding bird survey** Survey work was completed during the 2016 field season. The final report has been received, and it describes positive results.
3. **Bat survey** Survey work was completed during the 2016 field season. Final report has been received. Results suggest that bat populations are declining, but this is likely due to White Nose Syndrome.
4. **Mussel survey** Final survey reports have been completed in cooperation with the DNR Natural Heritage Conservation program. Results suggest that the mussel community within the lower AOC restoration areas is moderately diverse and has varying abundance depending on the site.
5. **Tree swallows** The tree swallow assessment conducted by USGS has been completed. Two reports were generated from their work. Initial findings indicate that contaminants were present in tree swallow eggs at elevated levels; however, they were below the lower limit at which egg hatching begins to be negatively affected (Custer 2016).
6. **Mink** Verification monitoring for mink began in 2014, but very few mink were captured for analysis; so mink monitoring has been ongoing in 2019. Increased sampling effort is scheduled for 2020.
7. **Fish Community Assessment** A three-year verification monitoring assessment for fish communities was completed in 2016. Results from this monitoring became available in 2018, and the final report indicates that fish populations are statistically similar to populations in sites with similar habitat but no contamination.
8. **Macroinvertebrate and Aquatic Habitat Assessment** A three-year verification monitoring assessment for fish communities, benthic macroinvertebrate communities, aquatic habitat and aquatic macrophytes was completed in 2016. A final report was published in 2018 and concluded that overall, the stream sites rated fair to excellent for invertebrate communities and stream habitat. There were a few sites that rated poor for invertebrate communities which may be attributed to degraded habitat (e.g., sheet piling) in the lower part of the river.
9. **Citizen-based monitoring** This project relies on collaboration between the DNR, Camp Y-Koda Outdoor Skills and Education, and the Sheboygan River Basin Partnership. Citizen volunteers collect data on birds, bird boxes, bats, frogs, toads, and mussels. The data that citizens collect is consistent with the official monitoring surveys that DNR staff and contractors collect. Citizen-based monitoring surveys provide a stronger dataset to support removal of the Degradation of Fish and Wildlife Populations BUI. Other project benefits include increasing community engagement and building citizens' capacity to care for the river and provide long term maintenance of habitat restoration sites after the AOC is delisted.