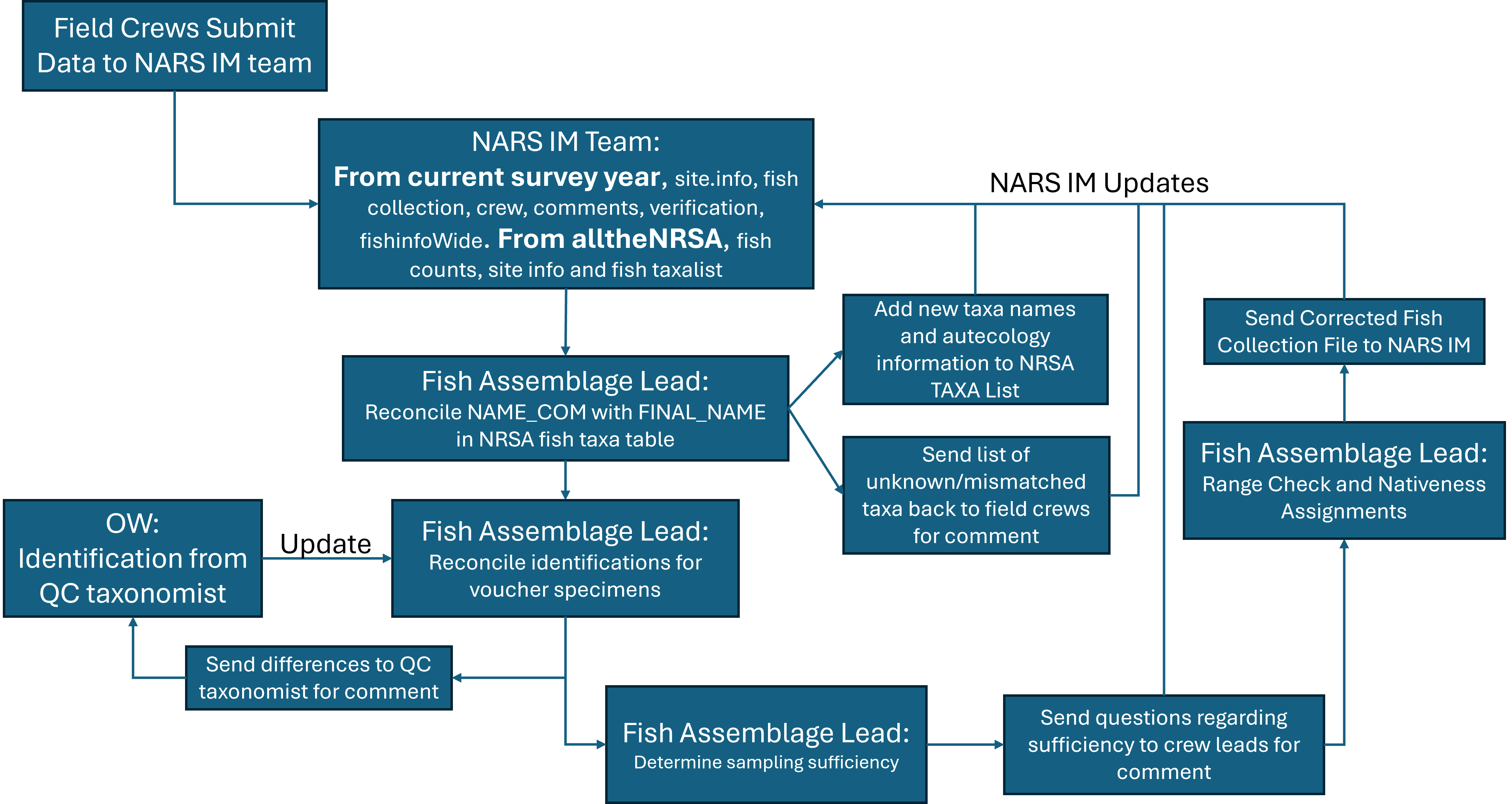
**National Rivers and Stream Assessment Fish Assemblage Quality Assurance Procedure 2023-2024 (Draft)**

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**Background:** Fish are ecologically and economically important components of aquatic ecosystems and serve as key indicators of overall biological integrity and water quality. Every five years, beginning in 2008, the United States Environmental Protection Agency in partnership with States and Tribes survey approximately 2,000 fish assemblages across the contiguous United States as part of the National Rivers and Streams Assessment (NRSA). The most recent survey was completed in 2023-2024 and consisted of 95 field crews identifying 20,335 specimens from 1,755 locations. For monitoring data to be useful for condition assessments, research, and decision making, it needs to be of the greatest quality. This presentation focuses on introducing NRSA and the fish assemblage data and the development and implementation of a semi-automated quality assurance protocol to ensure the quality of these data. A fuzzy matching routine was useful for reconciling spelling errors found in taxonomic names and an independent taxonomist verified 88% (n = 2,033 voucher specimens) of the field identifications. Site conditions, including permit restrictions, prevented samples from being collected at 432 sites and native/non-native status was assigned to all fishes by leveraging several existing databases. Fish assemblage data was then aggregated into a Multi-Metric Index to evaluate condition.



**Figure 1: Schematic of QA procedure.**

**Name Reconciliation:** The name reconciliation module harmonizes field identifications with the NRSA taxa list. Any identifications that were unknown or not easily reconciled were sent to the field crew for comment. If the field crew indicated that updates were made, corrections are added to NARS IM. Any taxa that were not collected during a previous survey are added to the NRSA taxa list along with their autecology information.

**Sampling sufficiency:** The sampling sufficiency module ensures that sampling efforts were consistent with the protocol outlined in the Field Manual such that the sampled assemblage is representative of the entire community. The categories used are consistent with previous surveys and balances input from field crew, total reach length, reach length fished and number of individuals collected. Instances where there was disagreement between the assignment and the value (Y/N) reported by the crews were checked manually.

**Range and Nativeness Checks:** The range and nativeness checks determine whether a specimen identified in the field was consistent with its known range and assigned native/nonnative status for each species at the HUC8 level. This module first created a table from NAS, NATURESERVE and previous NRSA surveys containing all species occurrences and HUC8 combinations and the native/nonnative status. The script then iteratively compared each 2324 occurrence to the table leveraging nested hydrologic unit codes. Any 2324 occurrences that could not be matched to the nativeness table were manually checked using all available resources.