Complexity of list homomorphism problems for reflexive digraphs

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For a fixed reflexive digraph $H = (V(H), E(H))$, the *list homomorphim problem*, LHOM(H), is the following:

> *Given an input graph $G = (V(G), E(G))$ and for each vertex $v \in G$ a list $L(v) \subset V(G)$, decide if there is a homomorphism $f : G \to H$ such that $f(v) \in L(v)$ for each $v \in V(G)$.*

This problem is equivalent to $CSP(H_u)$, where H_u is the structure obtained by expanding H with all possible unary relations. Bulatov showed that a dichotomy holds for the LHOM problem of arbitrary structures, but his result does not tell us which classes of graphs are tractable and which ones are NP-complete. Feder, Hell, Huang and Rafiey showed that if H is an adjusted interval digraph, then LHOM(H) is tractable and conjectured that otherwise it is NP-complete. We show that if H is not an adjusted interval digraph then it does not have weak-near-unanimity operations, and consequently it must be NP-complete.

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