Homoclinic intersections for area preserving diffeomorphisms of surfaces

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We prove that if S is a smooth compact boundaryless orientable surface of genus g, furnished with a smooth area form ω and $\mathrm{Diff}^r_\omega(S)$, $1 \leq r \leq +\infty$, is the space of C^r diffeomorphisms of S, endowed with the C^r topology, then there exists a residual set $\mathcal{R} \subset \mathrm{Diff}^r_\omega(S)$, such that every $f \in \mathcal{R}$ has hyperbolic periodic points and all these points have a transverse homoclinic intersection. Consequently the topological entropy is positive on an open and dense subset of $\mathrm{Diff}^r_\omega(S)$.