ABSTRACT. Symplectic torus bundles $\xi : T^2 \to E \to B$ are classified by the second cohomology group of B with local coefficients $H_1(T^2)$. For B a compact, orientable surface, the main theorem of this paper gives a necessary and sufficient condition on the cohomology class corresponding to ξ for E to admit a symplectic structure compatible with the symplectic bundle structure of ξ: namely, that it be a torsion class. The proof is based on a group-extension-theoretic construction of J. Huebschmann, 1981. A key ingredient is the notion of fibrewise-localization.