The large scale structure bispectrum in the squeezed limit couples large with small scales. Since relativity is important at large scales and non-linear loop corrections are important at small scales, the proper calculation of the observed bispectrum in this limit requires a non-linear relativistic calculation. We compute the matter bispectrum in general relativity in the weak field approximation. The calculation is as involved as existing second-order results. We find several differences with the Newtonian calculation such as the non-cancellation of IR divergences, the need to renormalize the background, and the fact that initial conditions must be set at second order in perturbation theory. For the bispectrum, we find relativistic corrections to be as large as the newtonian result in the squeezed limit. In that limit relativistic one-loop contributions, which we compute for the first time, can be as large as tree level results and have the same $1/k^2$ dependence as a primordial local non-Gaussianity signal where k is the momentum approaching zero. Moreover, we find the time dependence of the relavistic corrections to the bispectrum to be the same as that of a primordial non-Gaussianity signal.