Multivariate time-series data are increasingly collected, with the increasing deployment of affordable and sophisticated sensors. These multivariate time series are often of long memory, the inference of which can be rather complex. We consider the problem of modeling long-memory bivariate time series that are aggregates from an underlying long-memory continuous-time process. We show that with increasing aggregation, the resulting discrete-time process is approximately a linear transformation of two independent fractional Gaussian noises with the corresponding Hurst parameters equal to those of the underlying continuous-time processes. We also use simulations to confirm the good approximation of the limiting model to aggregate data from a continuous-time process. The theoretical and numerical results justify modeling long-memory bivariate aggregate time series by this limiting model. However, the model parametrization changes drastically in the case of identical Hurst parameters. We derive the likelihood ratio test for testing the equality of the two Hurst parameters, within the framework of Whittle likelihood, and the corresponding maximum likelihood estimators. The limiting properties of the proposed test statistic and of the Whittle likelihood estimation are derived, and their finite sample properties are studied by simulation. The efficacy of the proposed approach is demonstrated with a 2-dimensional robotic positional error time series, which shows that the proposed parsimonious model substantially outperforms a VAR(19) model.