

$$\log_{10}(m_c/m_\odot) = -3.1^{+1.4}_{-1.6}$$

- GW
- GW +  $\Delta N_{\text{eff}}$
- GW +  $\Delta N_{\text{eff}}$  + PBH

$$\log_{10} f_{\text{bh}} > -16.9$$

$$\sigma_{\text{bh}} = 0.43^{+0.41}_{-0.35}$$

 $\log_{10} f_{\text{bh}}$  $\sigma_{\text{bh}}$  $\log_{10}(m_c/m_\odot)$  $\log_{10} f_{\text{bh}}$  $\sigma_{\text{bh}}$ 