

1 **Title Page**

2 **Title: Anthropogenic drivers shift diatom dominance-diversity relationships and**
3 **transparent exopolymeric particles (TEP) production in Ganga River: Implication for**
4 **natural cleaning of river water**

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28 We studied the relations among diatom biodiversity, transparent exopolymeric particles
29 (TEP) and water quality at the confluences of four tributaries of the Ganga River
30 (Yamuna, Assi, Varuna and Gomti Rivers) during low flow. Diatom abundance changed
31 with concurrent shifts in water chemistry with dominance-diversity curves markedly
32 skewed from a log-normal pattern. Canonical correspondence analysis segregated chloride
33 loving and calcifilous species from N- and P- favored taxa. Despite pollution-induced
34 reduction of diatom diversity, TEP production continued to rise plausibly due to
35 dominance transference of TEP producers. With further increase in nutrient pollution
36 however, TEP declined. Since TEP enhance sedimentation-removal of carbon, nutrients
37 and heavy metals, our study confirms one of the fundamental mechanisms that underline
38 the self purification capacity of Ganga River and has relevance from a biodiversity/river
39 conservation perspective.

40 **Keywords:** Carbon sequestration, Confluence, diatom, Ganga River, N:P stoichiometry, TEP

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