

Year	Observation	Reference
1894	Marine bacteria are first discussed by Certes, Fischer and Russell	Certes [14], Fischer [22, 23], Russell [40]
1915,1917	Bacteriophage are discovered	d’Herelle [21], Twort [49]
1925	The presence of bacteriophage in seawater is noted	Arloing and Chavanne [2]
1946	ZoBell reports that bacteriophage occur only sporadically and in the littoral zone and concludes there is insufficient evidence for viruses to be considered as key to limiting open ocean bacteria	Carlucci and Pramer [12], ZoBell [59]
1947	The presence of bacteriophage described in the oceans	Kriss A..E [30]
1979	Using transmission electronic microscopy, up to $10^4$ ml <sup>-1</sup> bacteriophage particles are observed in coastal water, an observations that sparked the rebirth of virus ecology a decade later.	Torrella and Morita [48]
1989	“Rebirth” of virus ecology across a series off papers begins with a report of virus and bacteria abundances for which VBRs range from 0.2 (Raunefjorden) to 50 (North Atlantic)	Bergh et al. [4]
1990	Report of virus particles ranging from $10^6$ - $10^{11}$ per liter, infecting up to 7% of heterotrophic bacteria and each infected cell containing 10-100 mature virions	Proctor and Fuhrman [37]
1991-1993	Estimates of virus abundance exceeding bacteria abundance by 5-10 fold from a series of papers (this observation noted in Fuhrman and Suttle [25])	Cochlan et al. [17], Hara et al. [26], Paul et al. [34, 35], Wommack et al. [58]
1995	Maranger and Bird [31] survey 22 Quebec lakes and collect literature from 14 studies [4, 5, 7, 17, 26–28, 34, 41, 51, 58] and report VBR higher in freshwater (20-25) than marine systems (1-5).	Maranger and Bird [31]
2000	Wommack and Colwell suggest that VBR typically ranges between 3 and 10, and note that VBR decreases as prokaryote abundance increases.	Wommack and Colwell [57]
2000	A VBR “roughly equal to 10” (attributed to Maranger and Bird [31] is designated as a target for parameterizing the Kill-the-Winner theory of virus-microbe interactions.	Thingstad [47]
2004	Consistency in VBR is attributed to the idea that most viruses are phage that infect bacteria. Notes a VBR of 10 in marine systems and attributes to Maranger and Bird [31].	Weinbauer [50]
2004	Chibani-Chennoufi and colleagues advance the notion that VBR is 10:1 in the ocean and that this is justified by the claim that each prokaryote species can be infected by 10 different phage.	Chibani-Chennoufi et al. [15]
2008	VBR ratios reviewed in several publications that collate information from multiple studies, with a 10:1 consensus despite noted variation.	Clasen et al. [16], Wilhelm and Matteson [56]
2011	VBR reviewed across several regimes, with evidence for a linear relationship between viruses and prokaryote in the water column and a nonlinear relationship in sediment.	Danovaro et al. [18]
2014	The BioNumbers database, intended to facilitate quantitative analysis in the biosciences, lists VBR as 10	Milo et al. [32]

TABLE I: Origins and emerging consensus of the 10:1 ratio of virus abundance to bacteria abundance in aquatic systems - from freshwater lakes to the global oceans. We use the convention VPR in this manuscript rather than VBR.

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