

Visual Field Sizes & Terminology (outer diameters; not radii)					
Region	Rönne (1915) <sup>1)</sup>	Polyak (1941) <sup>2) 3)</sup>	Wandell (1995) <sup>4)</sup>	Other sources	Other sources
Foveal bouquet <sup>6)</sup>				8' – 16' <sup>6)</sup>	11' <sup>11)</sup>
Central Island (where cones have maximum length)		0.17° – 0.24° (10' – 14')			
S-cone free zone					20' – 25' <sup>12)</sup>
Foveola		1.4°	1°		
Avascular area		1.4° – 2.3°			
Rod-free area		1.7° – 2°	1.7°		1.25° <sup>11)</sup>
Fovea		5.2° <sup>3)</sup>	5.2° <sup>3)</sup>		
Parafovea		8.6°	~ 5° – 9°		
Perifovea		19°	~ 9° – 17°		
Macula		17°	~ 17°	6° – 10° <sup>6)</sup>	
Near periphery (Polyak)		29°			
Middle periphery		50°			
Near periphery (other)				± 30° = 60° <sup>7)</sup>	
Central visual field <sup>8)</sup>				± 30° = 60°	
Binocular visual field				114° <sup>9)</sup>	
Far periphery		40,000 μ (≈ 140°)			
Ora serrata (extreme periphery)		44,000 μ (≈ 152°) <sup>10)</sup>			
Total size, horizontal <sup>11)</sup>	60° nasal 107° temporal				
Total size, vertical <sup>11)</sup>	80° lower 70° upper				

<sup>1)</sup> Rönne, H. (1915): Zur Theorie und Technik der Bjerrumschen Gesichtsfelduntersuchung. Archiv für Augenheilkunde, 78(4), 284-301. Its data underlie the visual field maps in Traquair, H.M. (1938): *An introduction to clinical perimetry*. Henry Kimpton, London, Fig. 1 & 2.

<sup>2)</sup> Polyak, S.L. (1941). *The Retina*. Univ. of Chicago Press, Chicago.

<sup>3)</sup> Polyak's values in degrees were calculated from rounded, approximate outer diameters on the retina (in micrometers, e.g. 1500 μm for the fovea), so the last digit is not necessarily meaningful.

<sup>4)</sup> In the front cover of Wandell (1995), *Foundations of Vision*. Sinauer Ass., Sunderland, MA. See also Wandell's website *A Brief Organized List*, Stanford.edu.

<sup>5)</sup> A term used by Østerberg (1935), Polyak (1941), or Tyler & Hamer (*JOSA*, 1990) to denote the area of highest receptor density. Data, e.g. in Li, Tiruveedhula, & Roorda (*IOVS*, 2010, Fig. 6).

<sup>6)</sup> Oyster, C.W. (1999). *The Human Retina*. Sinauer, MA. Oyster used the data of Polyak, Oesterberg and Curcio. H. Wässle, personal communication 8/2019; there is no precise border for the macula, so estimates vary widely.

<sup>7)</sup> E.g. Besharse, J. & Bok, D. (2011). *The Retina and Its Disorders*. New York, NY, Academic Press. Fig.4, based on Anstis (1974). Note that the use of this term differs from Polyak's **by a factor of 2!**

<sup>8)</sup> A term used in standard perimetry, e.g. Lachenmayr & Vivell (1992), *Perimetrie*. Thieme, Stuttgart, New York.

<sup>9)</sup> Fischer, F. P. (1924). Über Asymmetrien des Gesichtssinnes, speziell des Raumsinnes beider Augen. *Pflüg. Arch. ges. Physiol.* 204, 203-233

<sup>10)</sup> Note that this value corresponds to the vertical extent but is much smaller than the horizontal extent.

<sup>11)</sup> For current data from perimetry see: Vonthein R. et al. (2007). The normal age-corrected and reaction-time-corrected isopter derived by semiautomated kinetic perimetry. *Ophthalmology* 114, 1065-1072.

<sup>12)</sup> Curcio, Sloan, Kalina & Hendrickson (1990). Human Photoreceptor Topography. *Journal of Comparative Neurology* 292: 497-523

<sup>12)</sup> Curcio, Allen, Sloan, et al. (1991). Distribution and morphology of human cone receptors stained with anti-blue opsin. *Journal of Comparative Neurology* 312: 610–624.  
Magnussen, Spillmann, Stürzel, Werner (2004). Unveiling the foveal blue scotoma through an afterimage. *Vision Research* 44: 377–383.

**Conversion of retinal measures:** 1° visual angle corresponds to 0.291 mm on the retina (Le Grand, 1957, *Light, Colour and Vision*, Chapman & Hall, p. 50), so 1 mm = 3.436°

