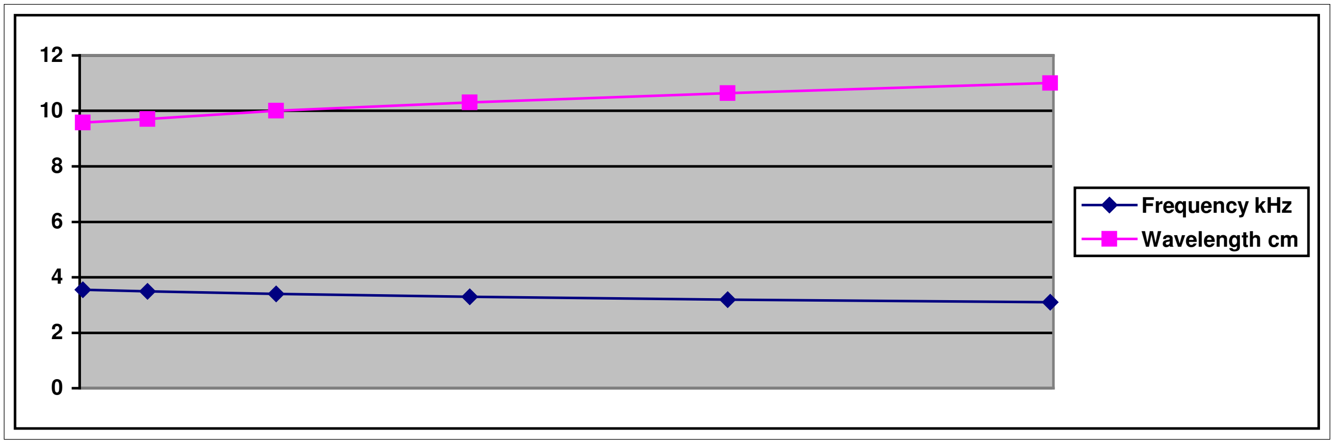
Frequency-analysis of a summer-signal at five distances from 0 - 150 m

This experiment (May 2009) verifies Ingvar Åstrand's discovery of the general entropy-law of nature (formulated $\Delta\lambda = h_{\varepsilon\pi} \cdot s$) that explains the radiation's constant fractional displacement($h_{\varepsilon\pi}$) as wave elongation($\Delta\lambda$) during its propagated distance(s).



0	10	30	60	100	150 m	Distance
3.55	3.5	3.4	3.3	3.2	3.1 kHz	Frequency
9.57	9.7	10	10.3	10.63	10.97 cm	Wavelength

Sound waves are elongating($\Delta\lambda$) with their covered distances(s). The wave - displacement's entropy - formula is : $\frac{\Delta\lambda}{s} = h_{\varepsilon\pi}$

The wavelength relation is: $\lambda = \frac{\upsilon}{f}$, and the velocity(υ) of sound is 340 m/s , which implies that the wave - length(λ) must be derived from the wave - displacement($\Delta\lambda$) $\rightarrow$ that is 10.97 - 9.57 = 1.4 cm $\rightarrow$ and the covered distance(s) that is :150 m

The displacement formula gives the sound's entropy constant $h_{\varepsilon\pi} = \frac{\Delta\lambda}{s} = \frac{1.4\,\text{cm}}{1.5 \cdot 10^4\,\text{cm}} \approx 0.0009333 \;\Rightarrow\; h_{\varepsilon\pi} \approx 9.333 \cdot 10^{-4}$

Displacement of the sound - waves during the propagation implies acceleration : $a = \frac{340\,\text{m/s} \cdot 9.333 \cdot 10^{-4}}{s} \approx 0.317322\ \text{m/s}^2$

Frequency transformed to wavelength :

$(f\ 3.55\,\text{kHz}) \Rightarrow \lambda = \frac{3.4 \cdot 10^4\,\text{cm/s}}{3.55 \cdot 10^3\,\text{n/s}} \approx 9.57\,\text{cm}$

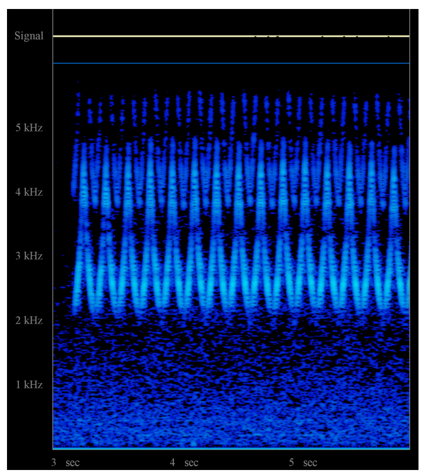
$(f\ 3.5\,\text{kHz}) \Rightarrow \lambda = \frac{3.4 \cdot 10^4\,\text{cm/s}}{3.5 \cdot 10^3\,\text{n/s}} \approx 9.7\,\text{cm}$

$(f\ 3.4\,\text{kHz}) \Rightarrow \lambda = \frac{3.4 \cdot 10^4\,\text{cm/s}}{3.4 \cdot 10^3\,\text{n/s}} \approx 10\,\text{cm}$

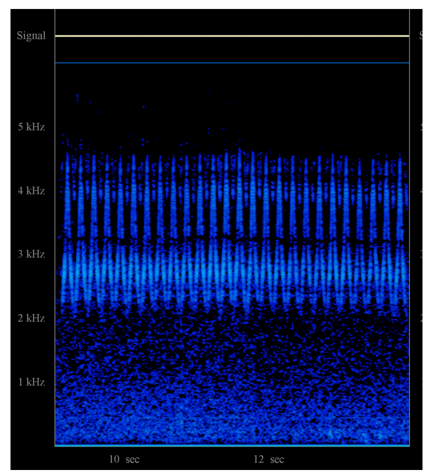
$(f\ 3.3\,\text{kHz}) \Rightarrow \lambda = \frac{3.4 \cdot 10^4\,\text{cm/s}}{3.3 \cdot 10^3\,\text{n/s}} \approx 10.3\,\text{cm}$

$(f\ 3.2\,\text{kHz}) \Rightarrow \lambda = \frac{3.4 \cdot 10^4\,\text{cm/s}}{3.2 \cdot 10^3\,\text{n/s}} \approx 10.63\,\text{cm}$

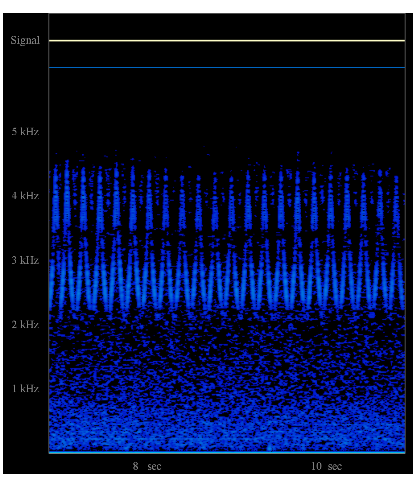
$(f\ 3.1\,\text{kHz}) \Rightarrow \lambda = \frac{3.4 \cdot 10^4\,\text{cm/s}}{3.15 \cdot 10^3\,\text{n/s}} \approx 10.97\,\text{cm}$



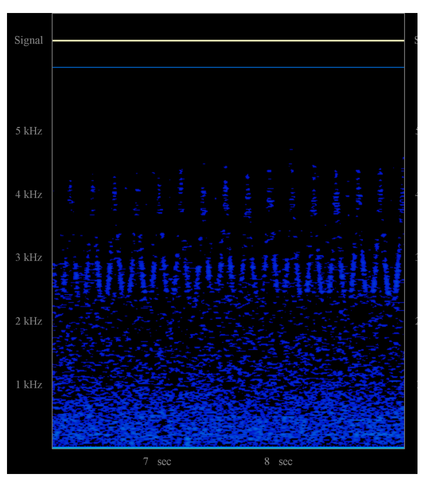
10 m



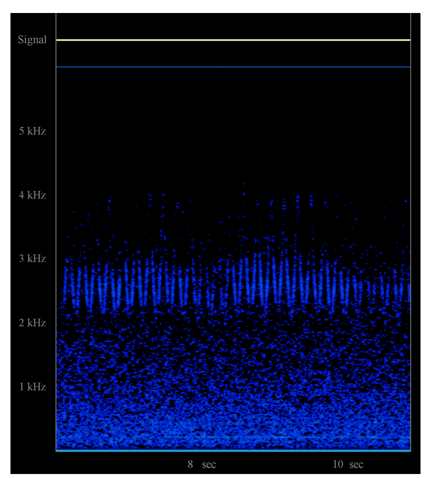
30 m



60 m



100 m



150 m

Ingvar Åstrand — http://www.theuniphysics.se — 1992–2009