CLAIMS

1. Method for density measurement of zooplankton in situ in an aqueous solution, the method comprising:

- acquiring at least one image of a volume V of the aqueous solution;
- processing the at least one image and identifying particles in the image;
- analyzing the identified particles based on a sharpness of each particle, and
- identifying zooplankton to be counted;

wherein analyzing a sharpness of each particle further comprising:

- tracing a boundary of each identified particle,
- calculating an intensity gradient for each pixel along the boundary of each particle from the at least one image based on a rate of change of intensity between neighbouring pixels, and
- calculating a mean intensity gradient of all the pixels along the boundary of each particle.

2. Method according to claim 1, wherein analyzing a sharpness of each particle further comprising correcting the mean intensity gradient for a general contrast level in the at least one image.

3. Method according to claims 1 or 2, further comprising filtering the identified particles in the at least one image based on shape parameters identifying which particles are zooplankton to be counted.

4. Method according to one of claims 1-3, further comprising controlling an illumination device for illumination of the volume of the aqueous solution in interaction with image acquiring and processing.

5. System for density measurement of zooplankton in situ in an aqueous solution, comprising:

- an imaging device for acquiring at least one image of a volume V of the aqueous solution;

a plate arranged at a distance from the imaging device, the distance and a view angle of the imaging device defining the volume V of the aqueous solution imaged by the imaging device; and

- an image processing device performing image processing of the at least one image from the imaging device identifying particles in the image, analyzing the identified particles based on a sharpness of each particle, and identifying zooplankton to be counted;

wherein analyzing a sharpness of each particle further comprising:

- tracing a boundary of each identified particle,
- calculating an intensity gradient for each pixel along the boundary of each particle from the at least one image based on a rate of change of intensity between neighbouring pixels, and
- calculating a mean intensity gradient of all the pixels along the boundary of each particle.

6. System according to claim 5, wherein the imaging device comprising a camera housing including at least one digital camera.

7. System according to claim 5 or 6, further comprising at least one illuminating device illuminating the volume of the aqueous solution.

8. System according to one of claims 5-7, further comprising a controller controlling the imaging device and the illuminating device based on feedback from the image processing device.

9. Use of the system according to one of claims 5-8 for establishing a density of zooplankton copepods in an aqueous solution.

10. Use of the system according to one of claims 5-8 for controlling the distribution of food to copepods in an automated zooplankton egg production facility.

11. Use of the method according to one of claims 1-4 for establishing a density of zooplankton in an aqueous solution.

12. Use of the method according to one of claims 1-4 for controlling the distribution of food to zooplankton in an automated copepod egg production facility.

13. Use according to any of claims 9-12, wherein the zooplankton are copepods.

14. Computer program adapted to be executed in a computer comprising a processor and a readable storage medium, for performing the method according to one of claims 1-4.

15. Computer program product having stored thereon instructions for performing the method according to one of claims 1-4.