

Charts for the Rapid Estimation of and/or Animal

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The need to estimate percentages and/or numbers often turns up during practical research work, e.g., the volume per cent of a particular food item of an animal when studying its food and feeding relationships; the per cent coverage by a certain plant species in a particular environmental setting (analysis of LANDSAT and aerial photographs); the determination of per cent acreages in Farming Systems Research, as when multicropping systems are being studied; the number of infected cells or of dead eggs in a particular sample.

Accurate but rapid estimates of numbers can be useful when planning research programs, e.g., visual censuses of reef fish numbers can give an idea of sample sizes which can be validly taken. In fish hatcheries, quick-and-dirty counting of a subsample of plankton can show if concentrations are sufficiently high to ensure successful

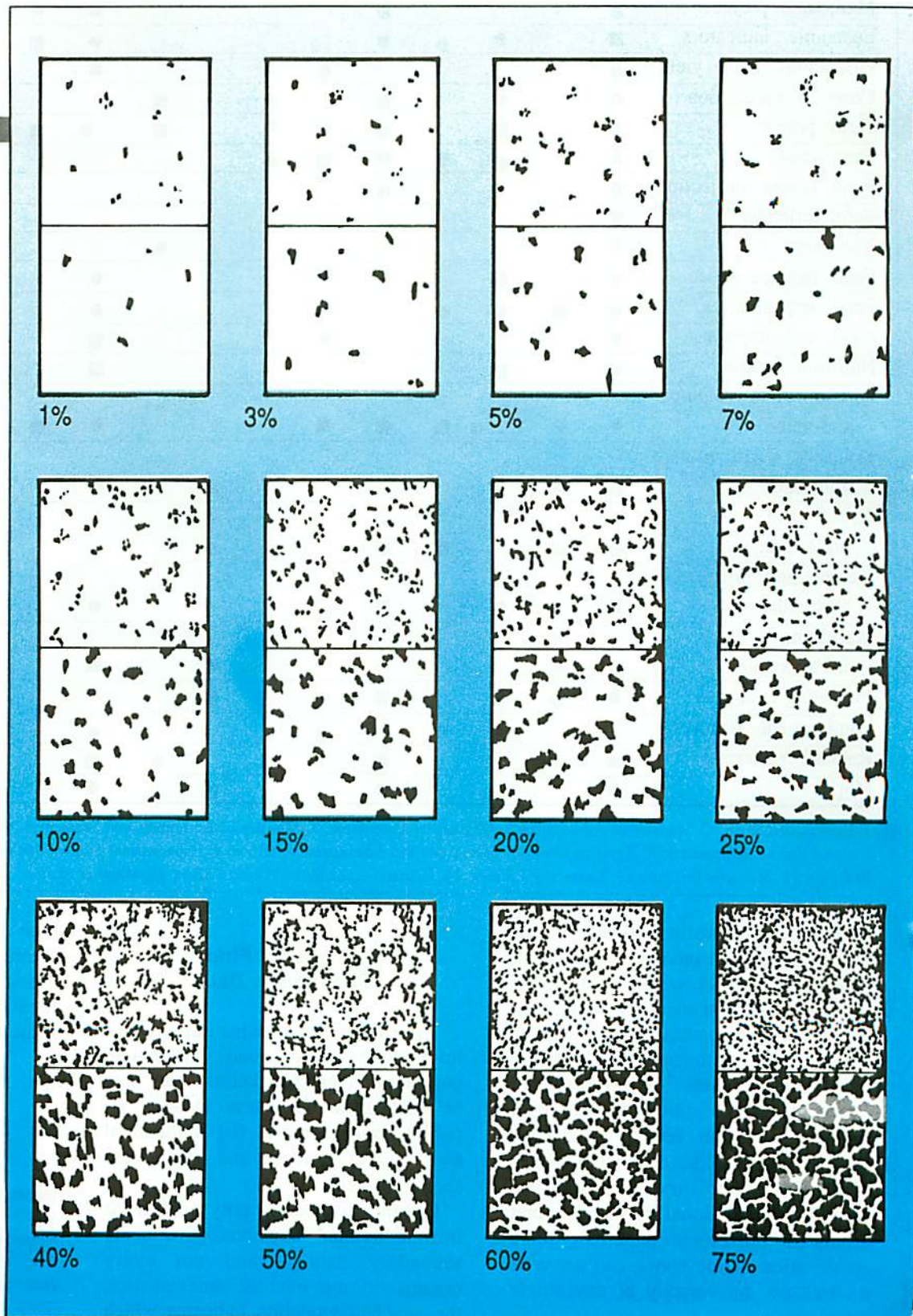


Fig. 1. Chart for use as a visual aid for estimating percentage composition of a sample, e.g., percentage algal cover in a pond, gut contents, etc.

Percentages and Numbers of Plants s in Samples

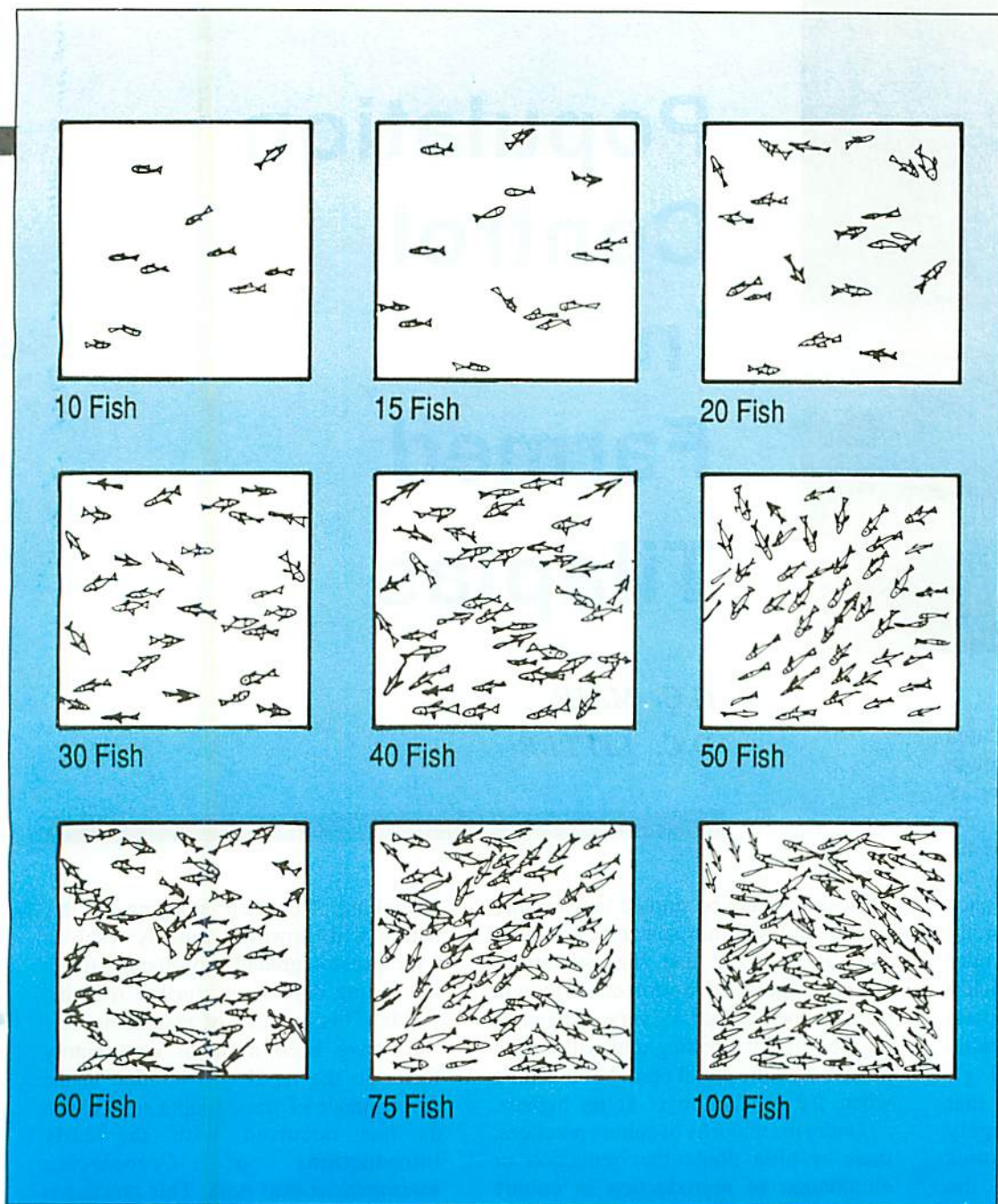


Fig. 2. Chart for use as a visual aid to estimating numbers of animals in a specific situation, e.g., number of fish fry in a subsample from a hatchery tank.

from the American Geological Institute, 2101 Constitution Avenue, NW, Washington DC, USA.

Using this basic idea, I have drawn up a modified version for my own use (Fig. 1), and developed a "numbers" chart (Fig. 2). These have proved invaluable and easy to use as field aids, e.g., estimating percentage contents of fish guts and when working in fish hatcheries and analyzing aerial photographs. Indeed, such charts can be drawn up to suit the needs of the job at hand. The shapes of the shaded areas on percentage charts or the animals drawn on numbers charts can be specifically adapted by drawing shapes or silhouettes more similar to those being counted. The shape of the chart can also be adapted

to resemble a test tube, beaker or whatever.



feeding by larvae. Fish numbers in ponds can also be estimated in cases where the water is clear enough.

In my experience, most researchers simply estimate such parameters "by eye", in spite of the inherent problems with both subjectivity and repeatability. Until now, however, I have been unable

to locate either charts or other aids to reduce these sources of error in either the fisheries or the aquaculture literature. One possibly useful chart was developed for use in mineralogy, when estimating percentage contents of minerals in a particular rock-slide. This chart, Data Sheet No. 6 of Geotimes, is available

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