

Was sagt die Körpergröße von Laubfröschen (*Hyla arborea*) über die Populationsentwicklung aus?

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What tells the body size of tree frogs (*Hyla arborea*) about population development?

In northwestern Switzerland, in an amphibian breeding site of national importance, calling males as well as the randomly observed females and pairs were measured, weighed and photographed for individual identification during a period of 34 years. The males could be divided into two groups based on their body size: Males with small body size (29–35 mm) and males with larger body size (36–45 mm). The small males grow on average more than twice as much than the larger males until the following year. As a result, the males present at the breeding site showed a size distribution with two peaks. The size growth of single individuals and the comparison with the body size of one-year-old tree frogs showed that the group of small males were 2-year-olds and the group of large males were 3-year-olds and older. The females could also be divided into a group of small females and a group of large females. The females of each group were larger and heavier than the males of the same group. Small males and small females did mate. In the 34 years of study, the proportion of small males fluctuated from year to year. From the average proportion of small males in the breeding community, it can be concluded that only a small proportion of 2-year-old males participated in reproduction. The correlation between the proportion of small males and population growth in the following year was not significant. In four years the population increased, although a particularly small proportion of small males was observed in the previous year. The observed pattern suggests that in years with unfavourable weather condition, some of the reproductive male tree frogs do not participate in the breeding community, giving the impression of a population decline. This makes it difficult to assess the development of a tree frog population in conservation work.

Key words: Amphibia, *Hyla arborea*, Switzerland, body size, growth, population development, calling males.

Zusammenfassung

In einem Schweizer Amphibienlaichgebiet von nationaler Bedeutung in der Nordwestschweiz wurde während 34 Jahren ein Teil der rufenden Männchen sowie die zufällig beobachteten Weibchen und Pärchen vermessen, gewogen und zur individuellen Erkennung fotografiert. Die Männchen ließen sich aufgrund ihrer Körpergröße in zwei Gruppen unterteilen: Männchen mit kleiner Körpergröße (29–35 mm) und Männchen mit größerer Körpergröße (36–45 mm). Die kleinen Männchen wuchsen bis zum darauffolgenden Jahr durchschnittlich mehr als doppelt so stark wie die größeren Männchen. Daraus ergab sich eine zweigipflige Größenverteilung der am Fortpflanzungsgewässer anwesenden Männchen. Das Größenwachstum einzelner Individuen und der Vergleich mit der Körpergröße einjähriger Laubfrösche zeigte, dass es sich bei der