

SUSCEPTIBILITY OF EARLY LIFE STAGES OF THE FOWLER'S TOAD (*Anaxyrus fowleri*) TO THE TADPOLE EDEMA VIRUS

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Background

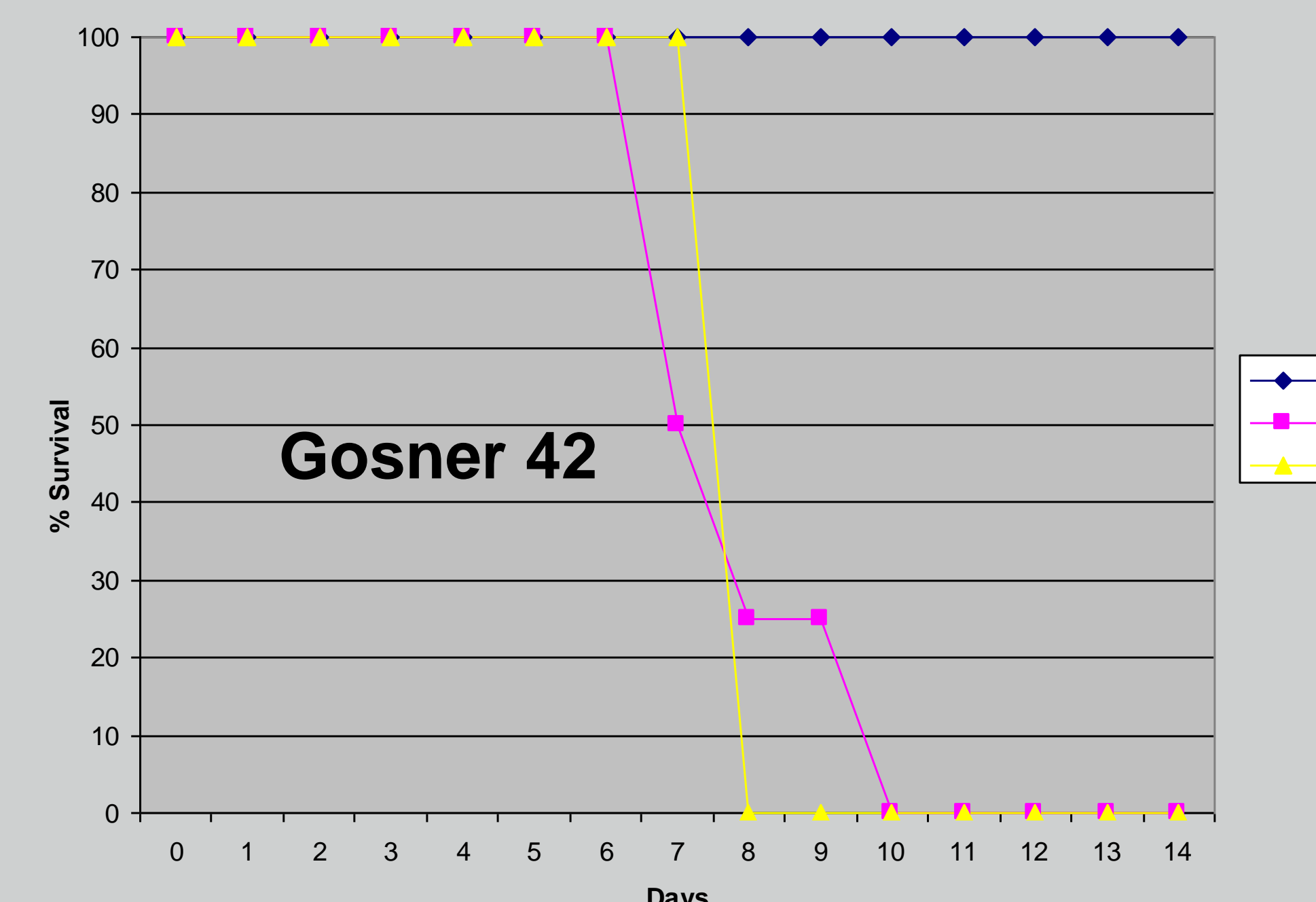
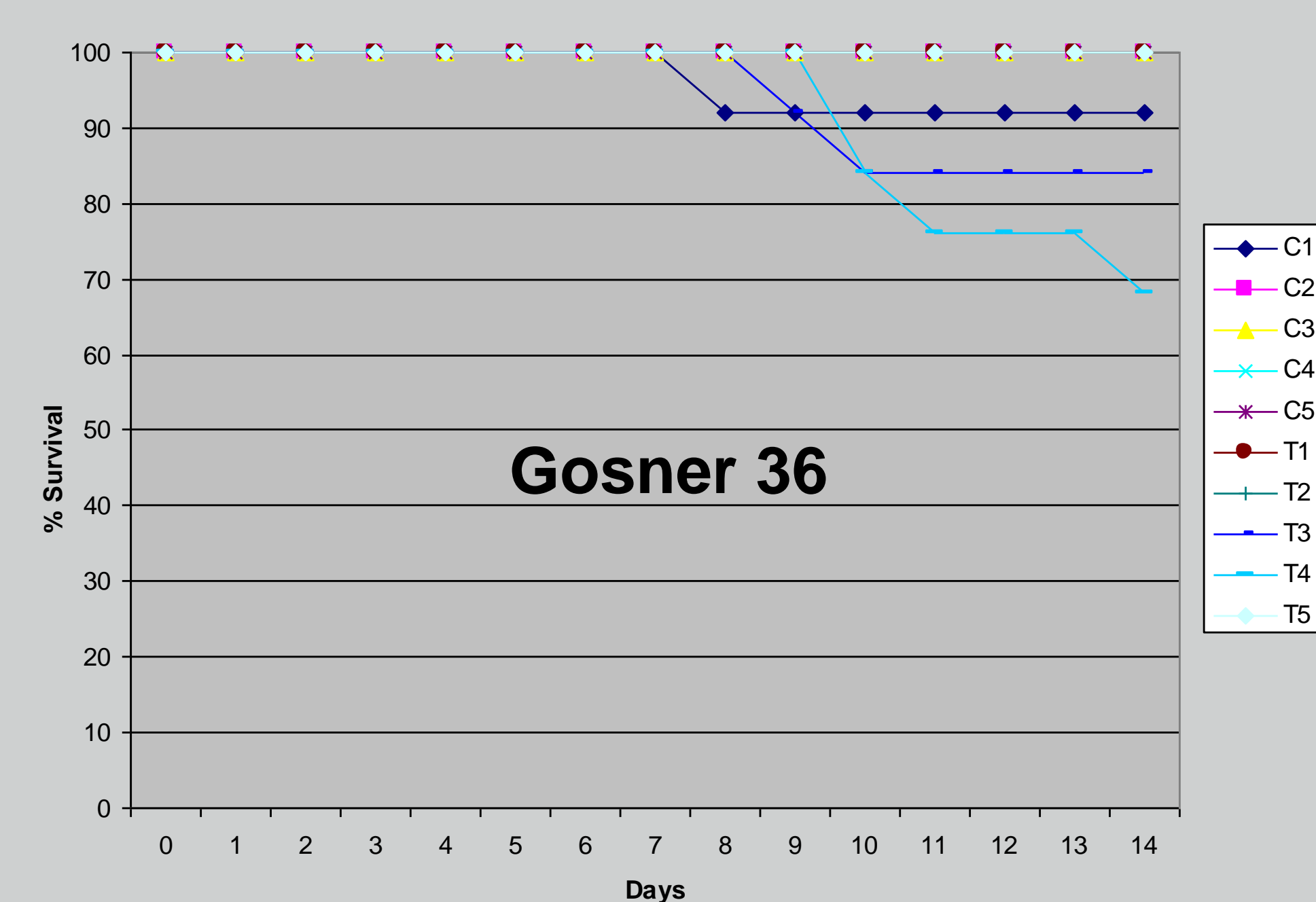
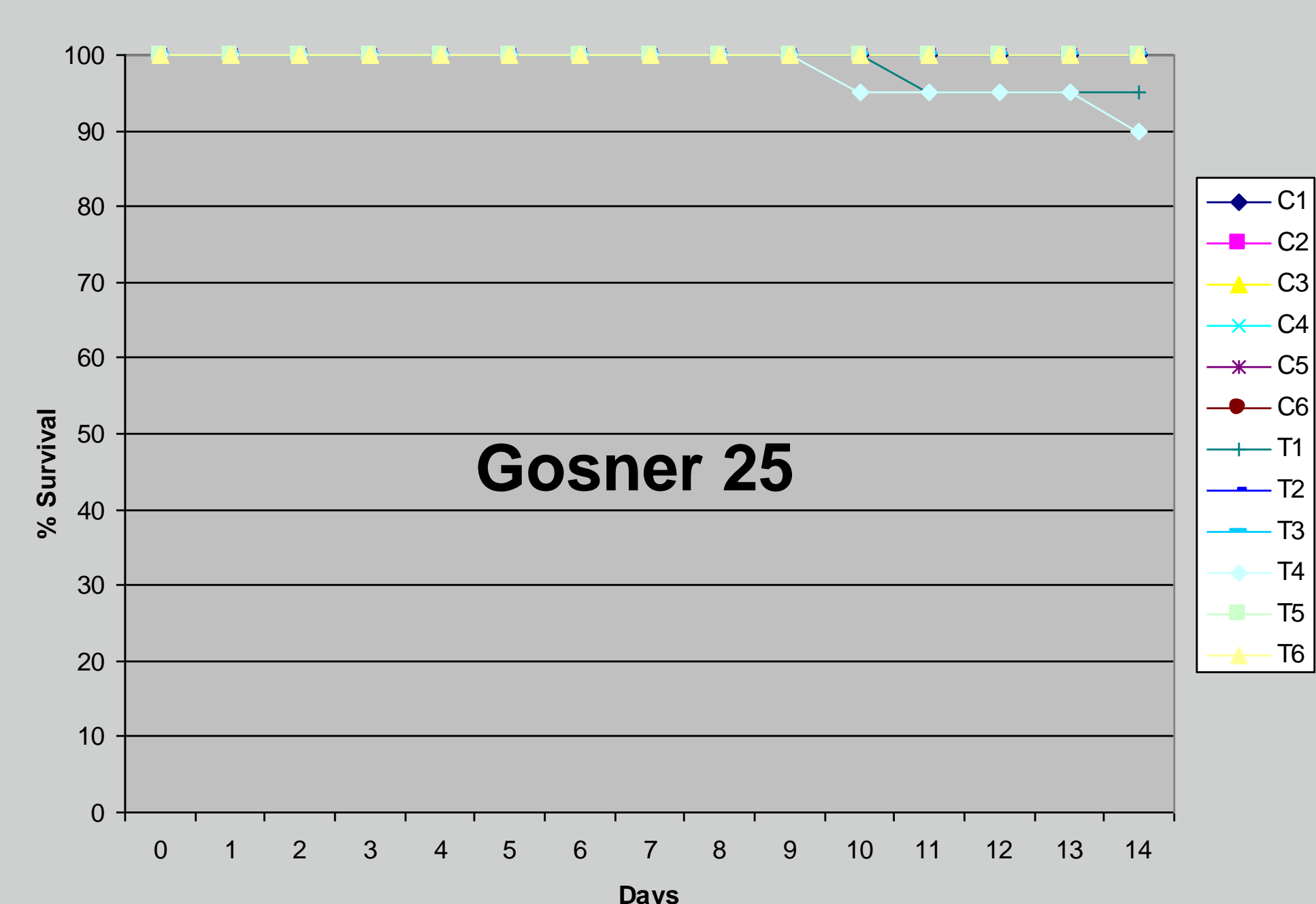
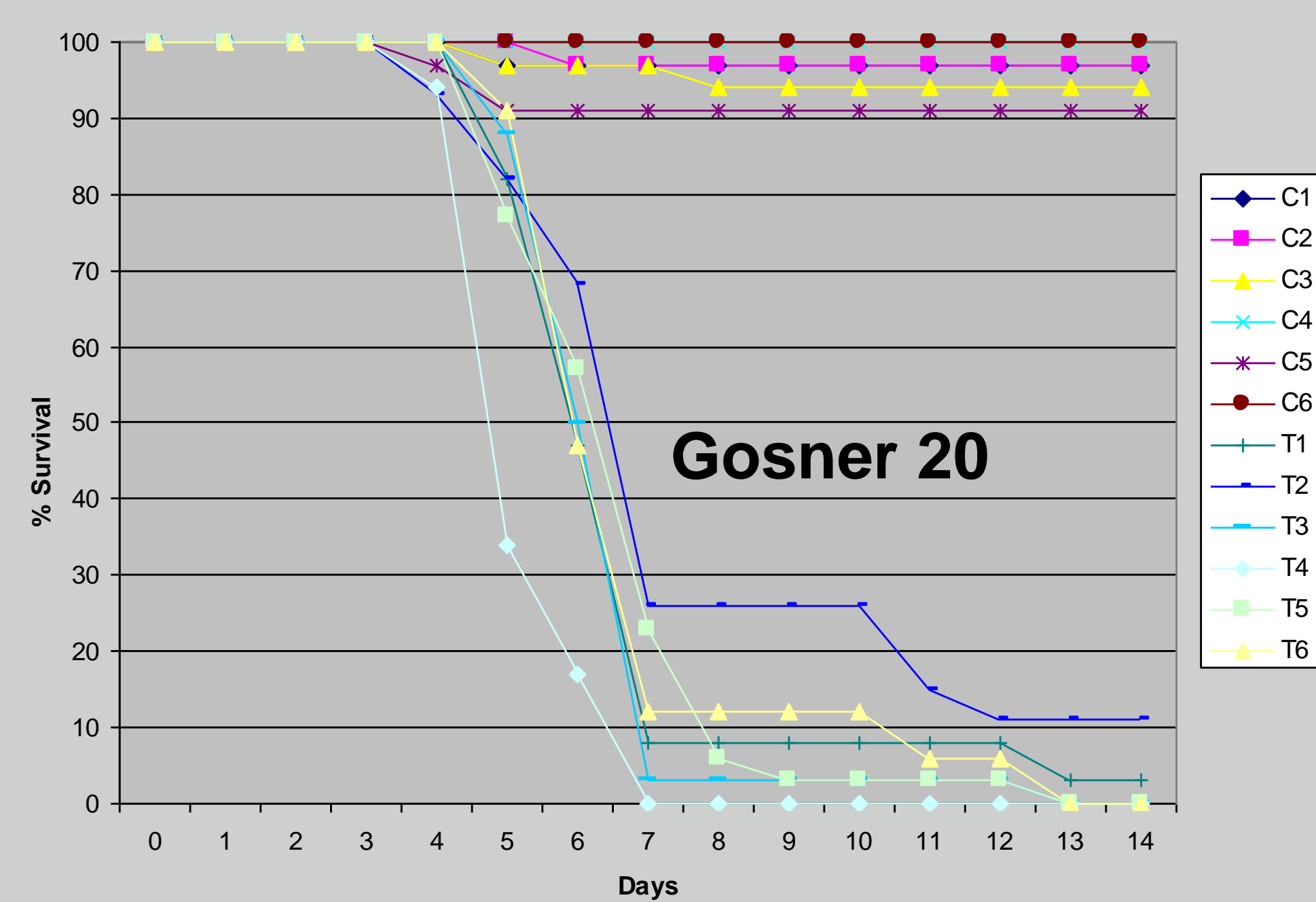
Tadpole edema virus (TEV) is an FV-3-like ranavirus that was first isolated from a diseased population of bullfrog tadpoles in a West Virginia pond during the late 1960's. TEV is known to be pathogenic to different species of anurans, including frogs and toads. Here, we investigate the comparative virulence of TEV to selected aquatic life stages (hatch to metamorphosis) of the Fowler's toad, *Anaxyrus fowleri*, an anuran species common throughout the Eastern United States.

Study Objective:
To determine the comparative susceptibility of pre-metamorphic bufonid toads to the tadpole edema virus.

Experimental Design

- Fertilized eggs collected
 - Screened for virus (Tissue culture)
 - Identified morphologically, confirmed molecularly
- Aqueous viral challenges
 - 10^5 TCID₅₀/ml x 24 h
 - 4 trials – 4 life stages
 - Replicate challenge groups and control groups in each trial
- Challenged tadpoles monitored for 14 days
 - Mortality
 - Viral presence/titers (survivors, non-survivors)
- Quantal viral infectivity assay – 50% endpoint in cell culture (BF-2)
- Life stages evaluated:
 - Gosner Stage 20 (Hatchlings)
 - Gosner Stage 25 (Mouth parts developed)
 - Gosner Stage 36 (Rear limb development)
 - Gosner Stage 42 (Metamorphosis)

Survival Curves



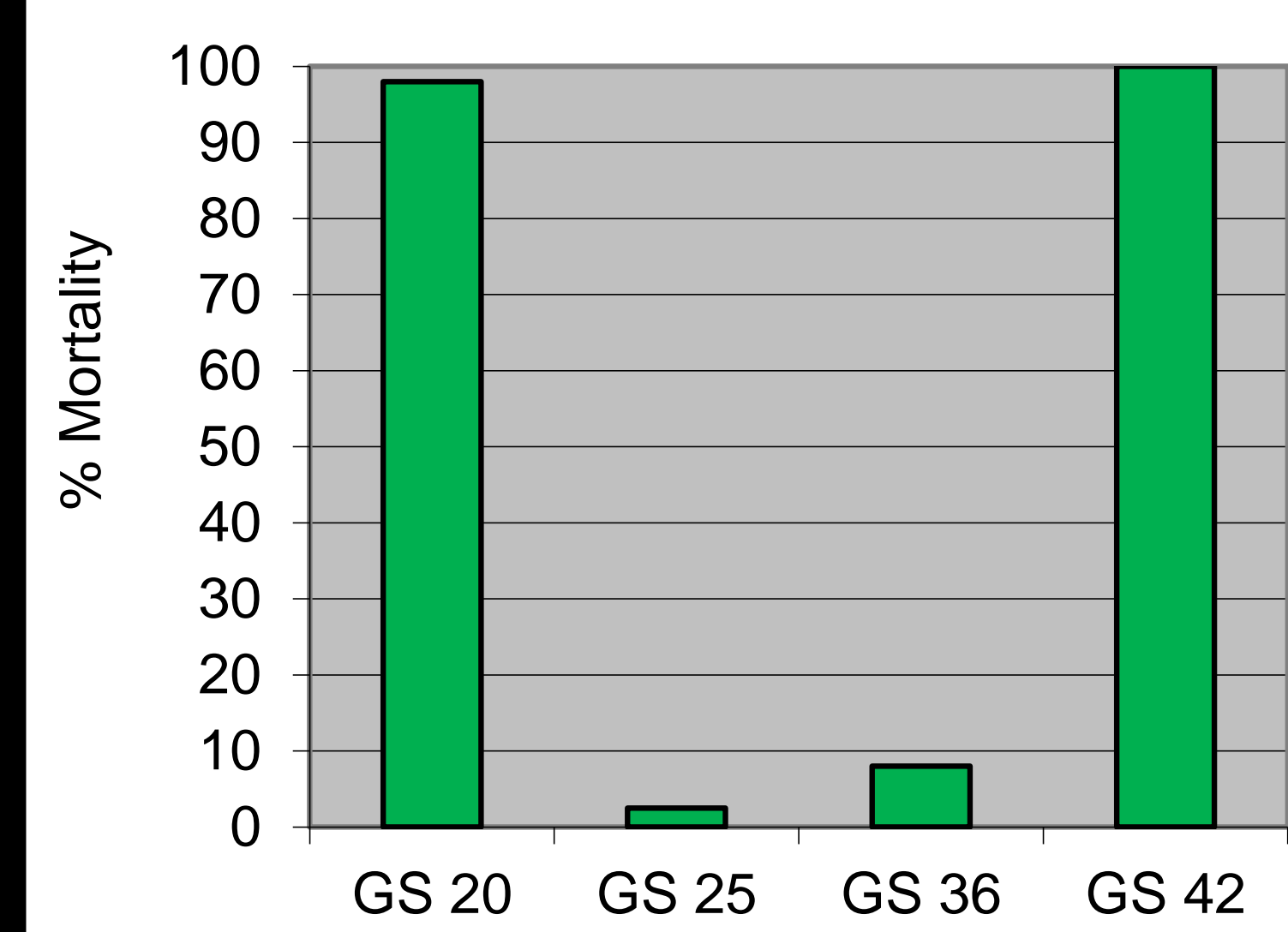
Viral Titers

- Titers among dead tadpoles challenged with TEV (all 4 groups) varied from 10^3 to $> 10^6$ TCID₅₀/g tissue
- Viral titers among challenged survivors (GS 25 and GS 36 groups only) varied from undetectable ($< 10^3$) to $> 10^6$ TCID₅₀/g tissue



CPE in BF-2 cell culture

Comparative Mortality Among Groups



Conclusions:

Among *Anaxyrus fowleri* tadpoles.....

- *Virus associated mortality related to TEV varies among developmental stages
- * Highest virus associated mortality noted post-hatch and at metamorphosis
 - Periods of increased developmental stress
 - Immune status ?

