**Supplemental File**
**Nature Communications Manuscript NCOMMS-20-39550-T**

**SUPPLEMENTAL FIGURES AND TABLES**

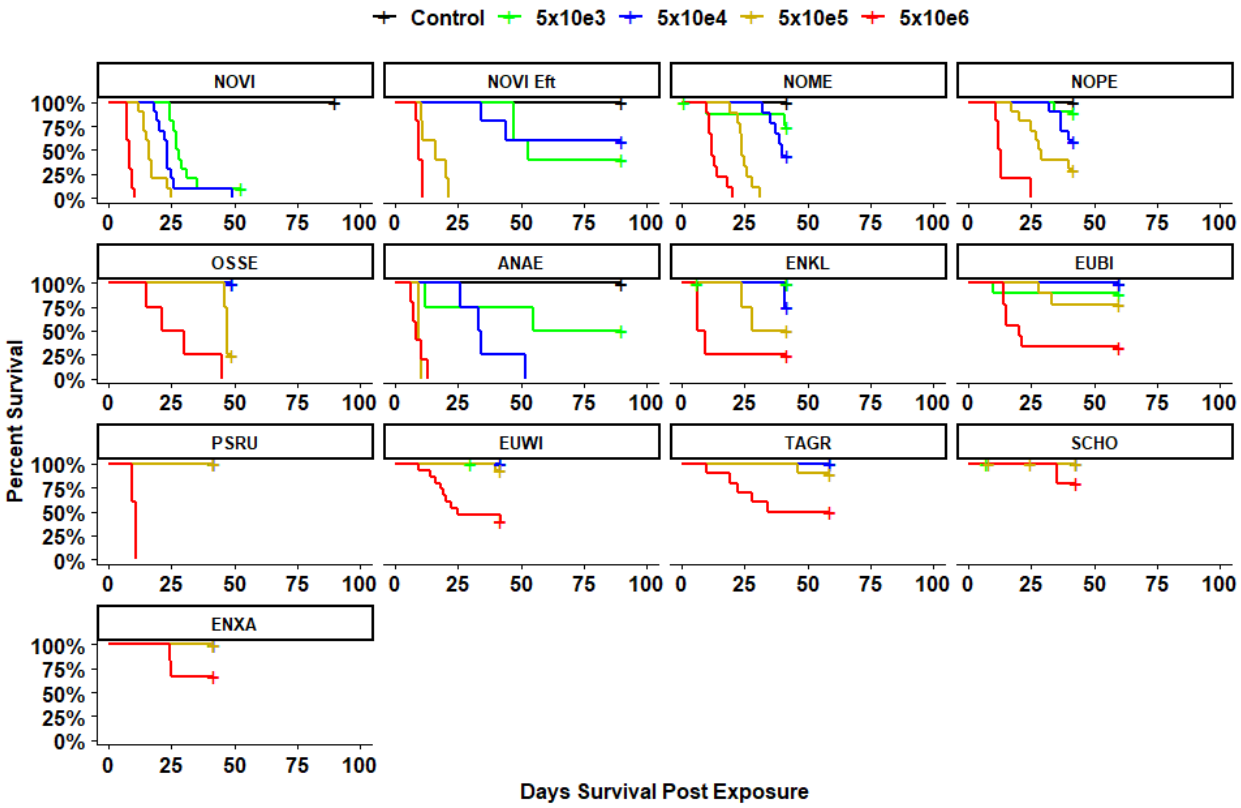
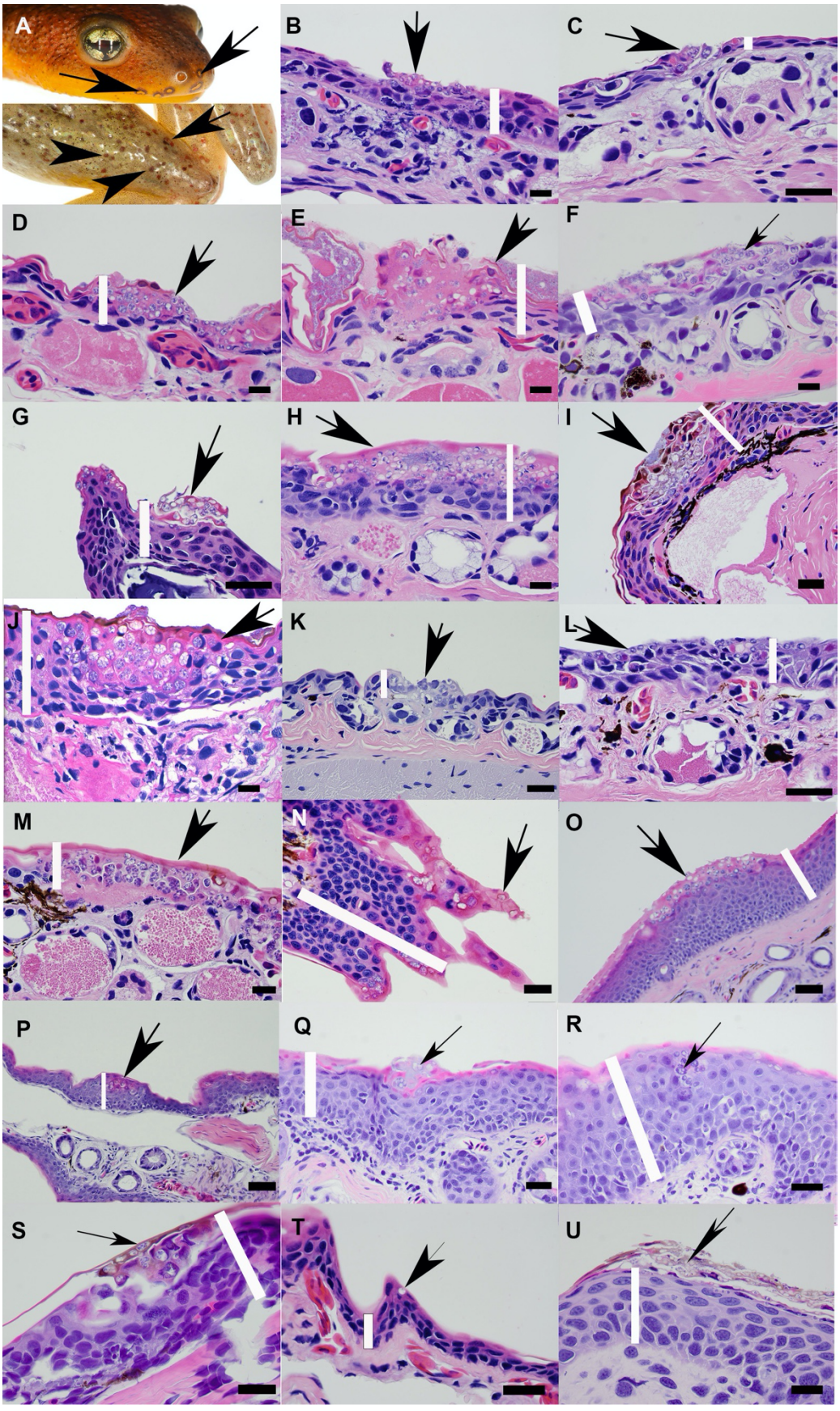



**Figure 1. Survival curves among four zoospore exposure doses for species that experienced mortality due to *Batrachochytrium salamandrivorans* (*Bsal*) chytridiomycosis**. Curves not shown = 100% survival. ANAE= *Aneides aeneus*, ENKL=*Ensatina eschscholtzii klauberi,* ENXA= *Ensatina eschscholtzii xanthoptica*, EUBI=*Eurycea bislineata,* EUWI=*Eurycea wilderae,* NOME = *Notophthalmus meridionalis,* NOPE=*Notophthalmus perstriatus*, NOVI = *Notophthalmus viridescens,* OSSE=*Osteopilus septentrionalis*, PSRU= *Pseudotriton ruber*, SCHO=*Scaphiopus holbrookii,* and TAGR= *Taricha granulosa*. All species listed here were adults except for NOVI eft = juvenile.


A
B
C
D
E
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G
H
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**Figure 2**. ***Batrachochytrium salamandrivorans* (*Bsal*) chytridiomycosis in experimentally exposed salamanders and anurans.** Gross lesions included classic target lesions in salamanders (A top arrows) and solid areas of necrosis as well as occasional target lesions in anurans (A bottom arrowheads and arrow, respectively). Hematoxylin and eosin stained skin sections of the gross lesions with epidermal destruction by *Bsal* fungi (arrows) are shown in the following species: adult *Notophthalmus viridescens* (B) juvenile *N. viridescens* (C), *N. perstriatus* (D), *N. meridionalis* (E), adult *Eurycea bislineata* (F), larval *E. bislineata* (G), *E. wilderae* (H), *Taricha granulosa* (I), *T. torosa* (J), *Aneides aeneus* (K), *Pseudotriton ruber* (L), *Ensatina eschollzii klauberi* (M), *E. eschollzii xanthoptica* (N), *Osteopilus septentrionalis* (O)*, and *Scaphiopus holbrookii* (P)*. Species with positive qPCR results that had no obvious gross lesions where *Bsal* was detected using histology included: *Anaxyrus americanus* (Q)*, *Hyla chrysoscelis* (R)*, *Plethodon metcalfi* (S), *Eurycea lucifuga* (T), and *Siren lacertina* (U). At least 5 individuals per species were inspected to verify *Bsal* infection and chytridiomycosis using histology (see Supplemental Table 1). Epidermal layer noted by white bars; * = anurans; all others = salamanders; black scale bars = 20 um.

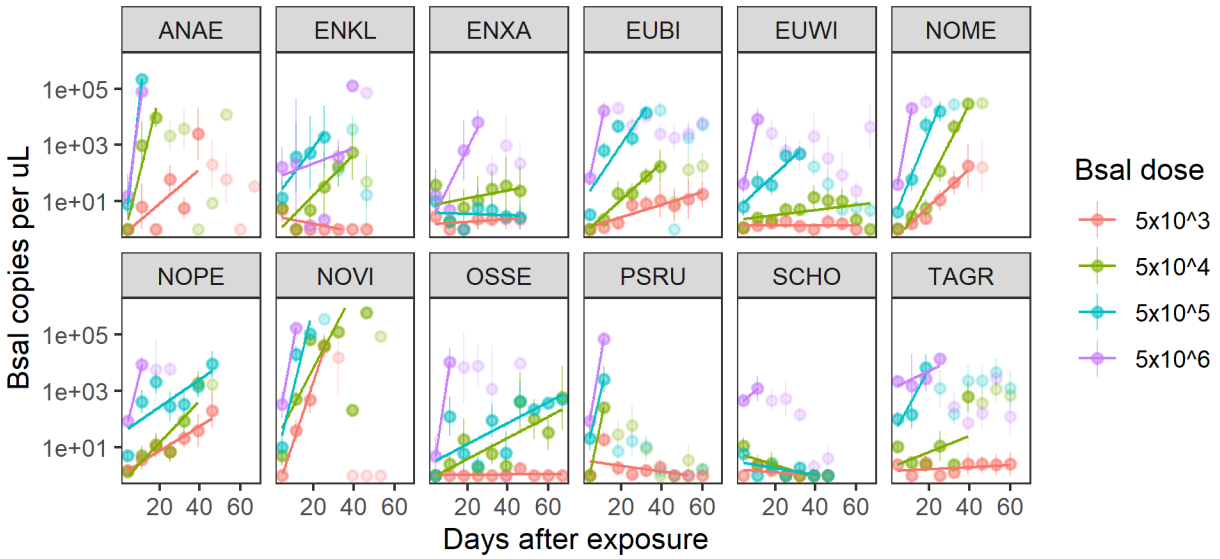


**Figure 3. *Bsal* growth rate varies with exposure dose**. *Bsal* load (mean and standard error for each sampling period) over the course of the exposure experiments for the species that developed mean loads > $10^3$ for at least one of the *Bsal* doses (see Supplementary Text for details). Darker symbols represent the linear portion of the growth curve on a log scale (see Supplementary Text for details), lighter symbols represent data collected after this period. Lines represent linear models fit to the log-transformed raw data for the linear portion of the growth curve. According to the ZINB mixed model described in the text, across all species there was a difference in the rate of *Bsal* increase between treatments ($\chi^2$=33.35, df=6, *P*=9.0 x $10^{-6}$). This was largely driven by more rapid development of *Bsal* infection in the 5x$10^6$ treatment compared to the other treatments – between the first week and second weeks after exposure model-predicted *Bsal* load increased 526% in the 5x$10^6$ treatment and only 165-320% in the other treatments. All hypothesis tests were two-sided. ANAE= *Aneides aeneus,* ENKL=*Ensatina eschscholtzii klauberi,* ENXA= *Ensatina eschscholtzii xanthoptica*, EUBI=*Eurycea bislineata,* EUWI=*Eurycea wilderae,* NOME = *Notophthalmus meridionalis,* NOPE=*Notophthalmus perstriatus,* NOVI = *Notophthalmus viridescens,* OSSE=*Osteopilus septentrionalis*, PSRU= *Pseudotriton ruber*, SCHO=*Scaphiopus holbrookii,* and TAGR= *Taricha granulosa*.

**Table 1. Host susceptibility and conservation risk for 35 North American amphibian species exposed to *Batrachochytrium salamandrivorans* (*Bsal*) at 15°C**

| Species | Life-stage | % Infection (n)[a] | % Mortality[a] | Avg Copies[a] | Avg Copies SE[a] | Incubation Period[a,b,c] | SE[a,c] | ID-50[c] | SE[c,d] | LD-50[c] | SE[c,d] | Conservation Risk[e] | Gross Lesions[f] | Histology[g] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Notophthalmus viridescens* | Adult | 100 (10) | 100 | 128072.1 | 38263 | 6.4 | 0.3 | 2897 | Inf | 2897 | Inf | Very High | Yes | Yes |
| *Notophthalmus viridescens* | Juvenile | 100(10) | 100 | 304147.9 | 159247 | 4.0 | 0.0 | NE | NE | NE | NE | Very High | Yes | Yes |
| *Notophthalmus perstriatus* | Adult | 100 (10) | 100 | 20067.27 | 5970 | 4.0 | 0.0 | NE | NE | 71767 | 1.8 | Very High | Yes | Yes |
| *Eurycea bislineata* | Adult | 100 (9) | 66.67 | 47998.22 | 6743 | 4.0 | 0.0 | 2987 | Inf | 2859708 | 3.0 | High | Yes | Yes |
| *Notophthalmus meridionalis* | Adult | 100 (9) | 100 | 35909.89 | 10125 | 4.7 | 0.7 | 3708 | Inf | 20368 | 1.5 | Very High | Yes | Yes |
| *Taricha granulosa* | Adult | 100 (10) | 50 | 18077.63 | 4222 | 4.0 | 0.0 | 5925 | Inf | 4862047 | 2.0 | Low | Yes | Yes |
| *Osteopilus septentrionalis* | Adult | 100 (4) | 100 | 57135.48 | 24901 | 8.5 | 1.5 | 6203 | Inf | 402625 | Inf | High | Yes | Yes |
| *Aneides aeneus* | Adult | 100 (10) | 50 | 35360 | 14387 | 7.0 | 1.0 | 9528 | 2.0 | 1409309 | 13.6 | Moderate | Yes | Yes |
| *Pseudotriton ruber* | Adult | 100 (5) | 100 | 86275.63 | 33811 | 4.0 | 0.0 | 15555 | 1.8 | 1570681 | Inf | Moderate | Yes | Yes |
| *Ensatina eschscholtzii klauberi* | Adult | 100 (4) | 75 | 29116.23 | 14397 | 4.0 | 0.0 | 15921 | Inf | 973838 | 2.2 | Moderate | Yes | Yes |
| *Eurycea wilderae* | Adult | 100 (15) | 66.67 | 20969.79 | 4340 | 5.7 | 0.8 | 42452 | 1.4 | 2993608 | 1.4 | Low | Yes | Yes |
| *Eurycea lucifuga* | Adult | 80 (5) | 0 | 164.6402 | 124 | 7.0 | 1.7 | 105417 | 2.5 | NE | NE | Low | No | Yes |
| *Ensatina e. xanthoptic* | Adult | 100 (6) | 33 | 44585.16 | 23441 | 9.0 | 2.4 | 252249 | 3.5 | 5871555 | Inf | Low | Yes | Yes |
| *Scaphiopus holbrookii* | Juvenile | 100 (5) | 20 | 1589.924 | 546 | 4.0 | 0.0 | 412380 | 2.8 | 7063138 | Inf | Low | No | Yes |
| *Taricha torosa* | Adult | 60 (10) | 0 | 80 | | 31.0 | | 450990 | NE | NE | NE | Low | Yes | Yes |
| *Rana chiricahuensis* | Juvenile | 62.5 (8) | 0 | 13.17908 | 6 | 4.0 | 0.0 | 496096 | Inf | NE | NE | Low | No | No |
| *Pseudobranchus striatus* | Adult | 80 (100) | 0 | 122.9917 | 37 | 4.0 | 0.0 | 1053259 | 1.9 | NE | NE | Low | No | No |
| *Hyla chrysoscelis* | Juvenile | 50 (10) | 0 | 14.95589 | 7 | 6.4 | 1.5 | 5000008 | 1.1 | NE | NE | Low | No | Yes |
| *Plethodon shermani* | Adult | 42.9 (7) | 0 | 7.06142 | 6 | 25.0 | 15.0 | 5333243 | Inf | NE | NE | Low | No | No |
| *Ambystoma opacum* | Adult | 10 (10) | 0 | 0.134 | 0 | 4.0 | 0.0 | 8629525 | Inf | NE | NE | Low | No | No |
| *Desmognathus ocoee* | Adult | 30 (10) | 0 | 1.89775 | 2 | 6.0 | 2.0 | 15859195 | 4.1 | NE | NE | Low | No | No |
| *Notophthalmus viridescens* | Larval | 17 (12) | 0 | 116 | | 7.0 | | 25648420 | Inf | NE | NE | Low | No | No |
| *Ambystoma mexicanum* | Adult | 50 (10) | 0 | 0.348 | 0 | 17.2 | 3.5 | 37417161 | 130.1 | NE | NE | Low | No | No |
| *Plethodon metcalfi* | Adult | 20 (10) | 0 | 1.13275 | 1 | 13.0 | 3.0 | 51557075 | 11.4 | NE | NE | Low | No | Yes |
| *Siren lacertina* | Adult | 20 (5) | 0 | 1.313978 | 1 | 45.0 | 0.0 | 52891331 | 35.3 | NE | NE | Low | No | Yes |
| *Cryptobranchus alleganiensis* | Juvenile | 1 (7) | 0 | 0.019 | 0 | 40.0 | 0.0 | NE | NE | NE | NE | Low | No | No |
| *Anaxyrus americanus* | Juvenile | 100 (5) | 0 | 552 | 369 | 4.0 | 0.0 | NE | NE | NE | NE | Low | No | Yes |
| *Eurycea bislineata* | Larval | 28 (7) | 0 | 11160.06 | 2379 | NE | NE | NE | NE | NE | NE | Low | No | Yes |
| *Ambystoma maculatum* | Juvenile | 0 (12) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Low | No | No |
| *Ambystoma laterale* | Adult | 0 (5) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Ambystoma maculatum* | Larval | 0 (10) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Desmognathus aeneus* | Adult | 0 (10) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Desmognathus monticola* | Adult | 0 (10) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Hemidactylium scutatum* | Adult | 0 (5) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Necturus maculosus* | Adult | 0 (5) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Atelopus zeteki* | Larval | 0 (10) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Rana catesbeiana* | Juvenile | 0 (6) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Rana catesbeiana* | Larval | 0 (30) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Rana pipiens* | Adult | 0 (5) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Rana sylvatica* | Juvenile | 0 (5) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |
| *Rana pipiens* | Larval | 0 (20) | 0 | 0 | 0 | NE | NE | NE | NE | NE | NE | Resistant | No | No |

[a] Highest exposure dose results (see Supplemental Table 2); percent infection and mortality were calculated using the total sample size (n) in this dose; copies refer to *Bsal* fungal DNA copies per microliter.
[b] Incubation period was calculated by averaging the number of days it took for each individual to test positive for *Bsal* DNA using quantitative-PCR for each species.
[c] NE= Not estimable, because either no or all animals became infected or died.
[d] Inf= Infinite standard error estimation due to limits of model estimation based on available data.
[e] Conservation risk (also referred to as mortality risk, Figure 3) was estimated as the product of the median infectious dose (ID-50) and lethal dose (LD-50) estimates, and ranked according to the 25$^{th}$ percentile quartiles. All species that became infected but did not die also were classified as low susceptibility and risk. Species with 100% infection and mortality at all treatment groups were classified as very high conservation risk. Note: NOVI larvae infection only occurred in metamorphosing individuals.
[f] Gross lesions were noted during each observation event. A "yes" in this column indicates that the species had gross lesions typically consistent with *Bsal* chytridiomycosis[1,2]. According to the case definition of *Bsal*, gross signs should not be used to diagnosis *Bsal* chytridiomycosis[1]; histology in combination with another diagnostic methods (e.g., qPCR, culture) are recommended[2].
[g] Histological examinations were performed on each species which had *Bsal* detected via qPCR. A "yes" in this column indicates that *Bsal* infections were confirmed through histological observations (see Supplemental Figure 2).

**Table 2. Collecting location and experimental conditions for *Batrachochytrium salamandrivorans* (*Bsal*) exposure experiments.** Asterisk (*) indicates collected as eggs from the wild.

| Species | Lifestage | Order | Family | IUCN Conservation Status | Source | Location | Start Date (Mo-Yr) | Housing Conditions | Exposure Method | Treatments | n | qPCR Processing Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ambystoma laterale* | Adult | Caudata | Ambystomatidae | Least Concern | Wild Caught | ME, USA | May-16 | Terrestrial | Water Bath | Control | 4 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Ambystoma maculatum* | Larval | Caudata | Ambystomatidae | Least Concern | Wild Caught | MA, USA | Aug-16 | Aquatic | Water Bath | Control | . | UMass Boston |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | . | |
| | | | | | | | | | | 5x10e5 | . | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Ambystoma maculatum* | Juvenile | Caudata | Ambystomatidae | Least Concern | Wild Caught | MA, USA | Dec-16 | Terrestrial | Water Bath | Control | . | UMass Boston |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | . | |
| | | | | | | | | | | 5x10e5 | . | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Ambystoma mexicanum* | Adult | Caudata | Ambystomatidae | Critically Endangered | Captive | MA, USA | Apr-17 | Aquatic | Water Bath | Control | 7 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Ambystoma opacum* | Adult | Caudata | Ambystomatidae | Least Concern | Wild Caught | TN, USA | Jan-16 | Terrestrial | Water Bath | Control | 10 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Anaxyrus americanus* | Juvenile | Anura | Bufonidae | Least Concern | Captive* | TN, USA | Oct-17 | Terrestrial | Water Bath | Control | 2 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | . | |
| | | | | | | | | | | 5x10e5 | . | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Aneides aeneus* | Adult | Caudata | Plethodontidae | Near Threatened | Captive | Indoor Ecosystems LLC | Feb-17 | Terrestrial | Water Bath | Control | 7 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Atelopus zeteki* | Larval | Anura | Bufonidae | Critically Endangered | Captive | Maryland Zoo | Mar-19 | Aquatic | Water Bath | Control | . | UMass Boston |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | . | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | . | |
| *Cryptobranchus alleganiensis* | Juvenile | Caudata | Cryptobranchidae | Near Threatened | Captive | Nashville Zoo | Oct-16 | Aquatic | Pipette Exposure | Control | 3 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 6 | |
| | | | | | | | | | | 5x10e4 | 7 | |
| | | | | | | | | | | 5x10e5 | 7 | |
| | | | | | | | | | | 5x10e6 | 7 | |
| *Desmognathus aeneus* | Adult | Caudata | Plethodontidae | Near Threatened | Captive | Indoor Ecosystems LLC | Jul-16 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Desmognathus monticola* | Adult | Caudata | Plethodontidae | Least Concern | Wild Caught | GA, USA | Jul-16 | Terrestrial | Water Bath | Control | 8 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Desmognathus ocoee* | Adult | Caudata | Plethodontidae | Least Concern | Wild Caught | NC, USA | May-16 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Ensatina eschscholtzii klauberi* | Adult | Caudata | Plethodontidae | Least Concern | Captive | Indoor Ecosystems LLC | Mar-18 | Terrestrial | Water Bath | Control | 2 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 4 | |
| | | | | | | | | | | 5x10e4 | 4 | |
| | | | | | | | | | | 5x10e5 | 4 | |
| | | | | | | | | | | 5x10e6 | 4 | |

**Table 2. Continued.**

| Species | Lifestage | Order | Family | IUCN Conservation Status | Source | Location | Start Date (Mo-Yr) | Housing Conditions | Exposure Method | Treatments | n | qPCR Processing Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ensatina e. xanthoptica* | Adult | Caudata | Plethodontidae | Least Concern | Wild Caught | CA, USA | Mar-18 | Terrestrial | Water Bath | Control | 6 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 6 | |
| | | | | | | | | | | 5x10e4 | 6 | |
| | | | | | | | | | | 5x10e5 | 6 | |
| | | | | | | | | | | 5x10e6 | 6 | |
| *Eurycea bislineata* | Larval | Caudata | Plethodontidae | Least Concern | Wild Caught | MA, USA | Aug-19 Oct-17 | Aquatic | Water Bath | Control | 3 | UTK UMass Boston |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 7 | |
| *Eurycea bislineata* | Adult | Caudata | Plethodontidae | Least Concern | Wild Caught | MA, USA | Aug-19 | Terrestrial | Water Bath | Control | 8 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 9 | |
| | | | | | | | | | | 5x10e4 | 9 | |
| | | | | | | | | | | 5x10e5 | 9 | |
| | | | | | | | | | | 5x10e6 | 9 | |
| *Eurycea lucifuga* | Adult | Caudata | Plethodontidae | Least Concern | Captive | Indoor Ecosystems LLC | Nov-17 | Terrestrial | Water Bath | Control | 2 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Eurycea wilderae* | Adult | Caudata | Plethodontidae | Least Concern | Wild / Captive | NC, VA, Indoor Ecosystems LLC | Oct-16 Oct-17 Nov-17 | Terrestrial | Water Bath | Control | 15 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 11 | |
| | | | | | | | | | | 5x10e4 | 15 | |
| | | | | | | | | | | 5x10e5 | 15 | |
| | | | | | | | | | | 5x10e6 | 15 | |
| *Hemidactylium scutatum* | Adult | Caudata | Plethodontidae | Least Concern | Captive | Indoor Ecosystems LLC | Feb-17 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Hyla chrysoscelis* | Adult | Anura | Hylidae | Least Concern | Captive* | TN, USA | May-16 | Terrestrial | Water Bath | Control | 10 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Necturus maculosus* | Adult | Caudata | Proteidae | Least Concern | Wild Caught | OH, USA | Apr-16 | Aquatic | Pipette Exposure | Control | 2 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4.5 | 4 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Notophthalmus meridionalis* | Adult | Caudata | Salamandridae | Endangered | Captive | Fort Worth Zoo | Apr-17 | Terrestrial | Water Bath | Control | 4 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 9 | |
| | | | | | | | | | | 5x10e4 | 9 | |
| | | | | | | | | | | 5x10e5 | 9 | |
| | | | | | | | | | | 5x10e6 | 9 | |
| *Notophthalmus perstriatus* | Adult | Caudata | Salamandridae | Near Threatened | Captive | Omaha Zoo | Apr-17 | Terrestrial | Water Bath | Control | 10 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Notophthalmus viridescens* | Adult | Caudata | Salamandridae | Least Concern | Wild Caught | TN, USA | Oct-18 | Aquatic | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Notophthalmus viridescens* | Eft | Caudata | Salamandridae | Least Concern | Wild Caught | PA & MA, USA | Aug-19 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Notophthalmus viridescens* | Larval | Caudata | Salamandridae | Least Concern | Wild Caught | MA, USA | Aug-18 | Aquatic | Water Bath | Control | 12 | UMass Boston |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | 12 | |
| | | | | | | | | | | 5x10e5 | 12 | |
| | | | | | | | | | | 5x10e6 | 12 | |
| *Osteopilus septentrionalis* | Adult | Anura | Hylidae | Least Concern | Wild Caught | FL, USA | Jan-19 | Terrestrial | Water Bath | Control | 2 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 4 | |
| | | | | | | | | | | 5x10e4 | 4 | |
| | | | | | | | | | | 5x10e5 | 4 | |
| | | | | | | | | | | 5x10e6 | 4 | |

**Table 2. Continued.**

| Species | Lifestage | Order | Family | IUCN Conservation Status | Source | Location | Start Date (Mo-Yr) | Housing Conditions | Exposure Method | Treatments | n | qPCR Processing Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Plethodon metcalfi* | Adult | Caudata | Plethodontidae | Least Concern | Wild Caught | NC, USA | Jul-16 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Plethodon shermani* | Adult | Caudata | Plethodontidae | Vulnerable | Wild Caught | NC, USA | Jan-16 | Terrestrial | Water Bath | Control | 7 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 7 | |
| | | | | | | | | | | 5x10e4 | 7 | |
| | | | | | | | | | | 5x10e5 | 7 | |
| | | | | | | | | | | 5x10e6 | 7 | |
| *Pseudobranchus striatus* | Adult | Caudata | Sirenidae | Least Concern | Wild Caught | FL, USA | Jun-19 | Aquatic | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Pseudotriton ruber* | Adult | Caudata | Plethodontidae | Least Concern | Captive | Indoor Ecosystems LLC | Nov-17 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Rana catesbeiana* | Juvenile | Anura | Ranidae | Least Concern | Wild Caught | NC,USA | Mar-16 | Aquatic | Water Bath | Control | 6 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 6 | |
| | | | | | | | | | | 5x10e4 | 6 | |
| | | | | | | | | | | 5x10e5 | 6 | |
| | | | | | | | | | | 5x10e6 | 6 | |
| *Rana catesbeiana* | Larval | Anura | Ranidae | Least Concern | Captive* | TN, USA | Nov-18 | Terrestrial | Water Bath | Control | 10 | UMass Boston |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 30 | |
| *Rana chiricahuensis* | Juvenile | Anura | Ranidae | Vulnerable | Captive * | Fort Worth Zoo | Mar-16 | Terrestrial | Water Bath | Control | 8 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 8 | |
| | | | | | | | | | | 5x10e4 | 8 | |
| | | | | | | | | | | 5x10e5 | 8 | |
| | | | | | | | | | | 5x10e6 | 8 | |
| *Rana pipiens* | Larval | Anura | Ranidae | Least Concern | Captive* | UMass Boston | Jul-19 | Aquatic | Water Bath | Control | 15 | UMass Boston |
| | | | | | | | | | | 5x10e3 | 15 | |
| | | | | | | | | | | 5x10e4 | 15 | |
| | | | | | | | | | | 5x10e5 | 15 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Rana pipiens* | Juvenile | Anura | Ranidae | Least Concern | Captive * | UMass Boston | Aug-19 | Terrestrial | Water Bath | Control | . | UMass Boston |
| | | | | | | | | | | 5x10e3 | . | |
| | | | | | | | | | | 5x10e4 | . | |
| | | | | | | | | | | 5x10e5 | . | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Rana sylvatica* | Juvenile | Anura | Ranidae | Least Concern | Captive* | TN, USA | Mar-16 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Scaphiopus holbrookii* | Juvenile | Anura | Scaphiopodidae | Least Concern | Captive* | TN, USA | Oct-17 | Terrestrial | Water Bath | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Siren lacertina* | Adult | Caudata | Sirenidae | Least Concern | Wild Caught | FL, USA | Jun-19 | Aquatic | Pipette Exposure | Control | 5 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 5 | |
| | | | | | | | | | | 5x10e4 | 5 | |
| | | | | | | | | | | 5x10e5 | 5 | |
| | | | | | | | | | | 5x10e6 | 5 | |
| *Taricha granulosa* | Adult | Caudata | Salamandridae | Least Concern | Wild Caught | CA, USA | Sep-17 | Terrestrial | Water Bath | Control | 8 | UT Knoxville |
| | | | | | | | | | | 5x10e3 | 10 | |
| | | | | | | | | | | 5x10e4 | 10 | |
| | | | | | | | | | | 5x10e5 | 10 | |
| | | | | | | | | | | 5x10e6 | 10 | |
| *Taricha torosa* | Adult | Caudata | Salamandridae | Least Concern | Wild Caught | CA, USA | Mar-18 | Terrestrial | Water Bath | Control | 10 | Washington State University |
| | | | | | | | | | | 1x10e3 | 10 | |
| | | | | | | | | | | 1x10e4 | 10 | |
| | | | | | | | | | | 1x10e5 | 10 | |
| | | | | | | | | | | 1x10e6 | 10 | |

**Table 3. Parameter estimates for analysis of *Bsal* growth rate across species.**

*Random effects*

| Group | Negative binomial Standard deviation | Correlation | Zero-inflated Standard deviation | Correlation |
|---|---|---|---|---|
| Species (intercept) | 1.94 | | 4.25 | |
| Species (slope – Day of swab) | 0.01 | -0.36 | 0.05 | -0.88 |
| Individual (intercept) | 2.73 | | 2.18 | |

*Fixed effects*

| Parameter | Negative binomial | Zero-inflated |
|---|---|---|
| (Intercept) | 2.07 | 1.92 |
| Day_of_Swab | 0.12 | -0.05 |
| Treatment5x10^4 | 0.72 | -1.14 |
| Treatment5x10^5 | 4.27 | -3.12 |
| Treatment5x10^6 | 5.29 | 0.34 |
| Day_of_Swab:Treatment5x10^4 | 0.06 | -0.05 |
| Day_of_Swab:Treatment5x10^5 | 0.04 | -0.06 |
| Day_of_Swab:Treatment5x10^6 | 0.17 | -1.19 |

**Table 4. Post-hoc tests for differences in *Bsal* growth rate between exposure doses across species.** All tests two-sided with Tukey adjustments for multiple comparisons.

| | Negative binomial | | | Zero-inflated | | |
|---|---|---|---|---|---|---|
| **Contrast** | ***t*** | **df** | ***P*** | ***t*** | **df** | ***P*** |
| $10^3$ - $10^4$ | -2.71 | 1986 | 0.035 | 2.53 | 1986 | 0.055 |
| $10^3$ - $10^5$ | -1.56 | 1986 | 0.40 | 2.40 | 1986 | 0.078 |
| $10^3$ - $10^6$ | -3.15 | 1986 | 0.0091 | 2.35 | 1986 | 0.088 |
| $10^4$ - $10^5$ | 1.18 | 1986 | 0.64 | 0.63 | 1986 | 0.92 |
| $10^4$ - $10^6$ | -2.08 | 1986 | 0.16 | 2.26 | 1986 | 0.11 |
| $10^5$ - $10^6$ | -2.47 | 1986 | 0.065 | 2.22 | 1986 | 0.11 |

**SUPPLEMENTAL NOTE 1**

**R Code for Bsal Detection Estimates**

```
##### Calculation 1 ########

N = 1283 # Total sample
n = 336 # Control subset
true_prevalence = 0.01 # True prevalence/probability of being infected

# What is the probability of not detecting Bsal in 336 tested individuals.  Assuming all individuals
# have an equal probability of having Bsal
prob_of_detection = 1 - (1 - true_prevalence)^n

# With true_prevalence = 0.05, the probability of detecting Bsal approx 1 -> you are going to detect it on
one of your control animals
# With true_prevalence = 0.01, the probability of detection Bsal = 0.966 -> There is a < 5% change that
you falsely say no Bsal on controls

# Check with a simulation
sims = 10000
detected = array(NA, sims)

for(i in 1:sims){
        newts = rbinom(N, 1, true_prevalence)
        samp_newts = any(sample(newts, n, replace=FALSE))
        detected[i] = samp_newts
}

#Probability of detecting Bsal
sum(detected) / sims

# Same results as above: < 5% chance of failing to detect Bsal if it exists.

##### Calculation 2 ########

# Let's now say each individual has a different probability of having Bsal, but that the
# average is 0.01 or 0.05
true_prevalence = 0.01
phi = 1 # Dispersion parameter of beta distribution
alpha = phi * true_prevalence
beta = phi*(1 - true_prevalence)

# Check with a simulation
sims = 10000
detected = array(NA, sims)

for(i in 1:sims){
```

```
        # Beta binomial simulation
        probs = rbeta(N, alpha, beta)
        newts = rbinom(N, size=1, prob=probs)
        samp_newts = any(sample(newts, n, replace=FALSE))
        detected[i] = samp_newts
}

# Probabiliy of detecting Bsal
sum(detected) / sims

# There is no substantial change -> there is still less than a 5% that you fail to detect
# Bsal given its presence.
```

**SUPPLEMENTAL INFORMATION REFERENCES**


1 White, C. L. *et al.* Amphibian: A case definition for Batrachochytrium salamandrivorans chytridiomycosis. *Herpetological Review* **47**, 207-207 (2016).

2 Thomas, V. *et al.* Recommendations on diagnostic tools for Batrachochytrium salamandrivorans. *Transbound Emerg Dis* **65**, e478-e488, doi:10.1111/tbed.12787 (2018).