**Figure legends**

**Figure 1. *Rana muscosa* translocated juvenile 2019 (photo by Tali Hammond)**

**Figure 2A. Weight changes in frogs brumated for four weeks compared to non-brumated frogs.** Eighteen *R. muscosa* in each treatment group, weighed every four weeks and averages plotted across time for a total of 34 weeks. The brumation period is highlighted in blue and blue dots bordered in dark blue are indicative of weights during the brumation period. Solid purple dots represent the active period during which frogs underwent increases in weight. Grey dots indicate weight changes in non-brumated frogs. Non-brumated frogs continued to gain weight while their brumated counterparts-maintained weights indicating a significantly different rate of weight change between the two groups during the 4-week brumation period (Table 1). Ninety-five percent confidence intervals are represented by the shaded areas.

**Figure 2B. SUL changes in frogs brumated for four weeks compared to non-brumated frogs.** Eighteen frogs in each treatment group, measured every four weeks and averages plotted across time for a total of 34 weeks. The brumation period is highlighted in blue and blue dots bordered in dark blue are indicative of SUL during the brumation period. Solid purple dots represent the active period during which frogs underwent increases in SUL. Grey dots indicate weight changes in non-brumated frogs. Ninety-five percent confidence intervals are represented by the shaded areas.

**Figure 3A. Weight changes in frogs brumated for 12 weeks compared to non-brumated frogs.** Seventy-four frogs in each treatment group, weighed every four weeks for 16 weeks at which time 44 frogs were translocated back to the wild. From week 16 average weights were measured in 30 frogs from each treatment group. Average weights were plotted across time for a total of 32 weeks. The brumation period is highlighted in blue and blue dots bordered in dark blue are indicative of weights during the brumation period. Solid purple dots represent the active period frogs during which frogs underwent increases in weight. Grey dots indicate weight changes in non-brumated frogs. Ninety-five percent confidence intervals are represented by the shaded areas.

**Figure 3B. SUL changes in frogs brumated for 12 weeks compared to non-brumated frogs.** Seventy-four frogs in each treatment group, weighed every four weeks for 16 weeks at which time 44 frogs were translocated back to the wild. The brumation period is highlighted in blue and blue dots bordered in dark blue are indicative of SULs during the brumation period. Solid purple dots represent the active period frogs during which frogs underwent increases in SUL. Grey dots indicate SUL changes in non-brumated frogs. Ninety-five percent confidence intervals are represented by the shaded areas. From week 16 average SULs were measured in 30 frogs from each treatment group. Average weights were plotted across time for a total of 32 weeks.

**Figure 4A. Weight differences recorded from animals recaptured post-translocation over a 16-week period.** Figure in the top hand left corner illustrates the average weight in brumated and non-brumated frogs and shows average weights were even approximately across treatment groups (±11 grams). Scatter plot illustrates the average increase in weight plotted across time and the number of frogs recaptured during each survey are represented by each dot; purple for brumated and grey for non-brumated. An uneven number of frogs from each group was recaptured at every time point. Standard error bars are shown where possible and the predicted linear growth curves shown in a black segmented line (non-brumated) and purple segmented line (brumated) frogs.

**Figure 4B. SUL differences recorded from animals recaptured post-translocation over a 16-week period.** Figure in the top hand left corner illustrates the average weight in brumated and non-brumated frogs and shows average weights were approximately even across treatment groups (~ 46 – 48 mm). Scatter plot illustrates the average increase in weight plotted across time and the number of frogs recaptured during each survey are represented by each dot; purple for brumated and grey for non-brumated. An uneven number of frogs from each group was recaptured at every time point. Standard error bars are shown where possible and the predicted linear growth curves shown in a black segmented line (non-brumated) and purple segmented line (brumated) frogs.

**Table 1.** Comparison in weights and rates of weight gain between brumated for 4-weeks and non-brumated frogs. Weights between brumated frogs compared to non-brumated were significant from week 4 (end of brumation) and throughout the duration of the 34-week study. Estimated marginal means were used to analyse the differences in rates of weight gain, every four weeks for 34 weeks. Week 0 represents the beginning of the brumation period (blue shaded) and week 4 marks the end.

**Table 2.** Comparison in SUL and rates of increase in SUL between captive, frogs brumated for 12 -weeks and non-brumated conspecifics during a 34-week study. Frogs brumated for 12-weeks did not significantly increase in SUL until eight weeks after they had emerged from brumation. From week 17, brumated frogs began growing and increased their SUL significantly compared to past time points. When compared to non-brumated frogs, the rate of change in SUL as indicated by estimated marginal means (eemeans) showed a difference in SUL between brumated and non-brumated frogs only one time point (week 9 = 4 weeks after the winter period had ended for the brumation group (Figure 2)). However, the final two time points measured, (weeks 17 and 34), that although rates of SUL increase were not different between the groups, brumated frogs were still significantly lighter than non-brumated frogs. Week 0 represents the beginning of the brumation period (blue shaded) and week 4 marks the end.

**Table 3.** Comparison in weights and rates of weight gain between brumated and non-brumated frogs held in captivity for 32-weeks. Frogs brumated for 12 weeks showed significantly lower weights compared to captive non-brumated conspecifics at every time point measured (Figure 3). Similarly, brumated frogs had a significantly lower rate of weight gain compared to non-brumated frog and this trajectory prevailed throughout the 32-week study. Week 0 represents the beginning of the brumation period (blue shaded) and week 12 marks the end.

**Table 4. Comparison in SUL and rates of SUL increase between brumated and non-brumated frogs held in captivity for 32-weeks.** Frogs brumated for 12 weeks showed significantly smaller SULs compared to captive non-brumated conspecifics at every time point measured (Figure 3). Similarly, brumated frogs had a significantly lower rate of weight gain compared to non-brumated frog and this trajectory prevailed throughout the 32-week study. Week 0 represents the beginning of the brumation period (blue shaded) and week 12 marks the end.

**Table 5. Comparison in A) weight and B) SUL and rates of growth between 12-week brumated and non-brumated frogs translocated to the wild**. Frogs brumated for 12 weeks showed significantly lighter weights (A) and smaller SULs (B) compared to captive non-brumated conspecifics until translocation. Post-release weights matched those of non-brumated conspecifics within 1-week of translocation and rates of weight gain were significantly higher in the brumation group in the weeks after translocation before levelling out (Fig. 6). Week 0 represents the beginning of the brumation period (blue shaded) and week 12 marks the end, week 16 (yellow) marks date of translocation and green includes subsequent weeks of recapture.

**Table 6.** A) Differences in weight recorded for brumated and non-brumated frogs that were translocated midway through the study (week 16) versus those that remained in captivity for 32-weeks. B) Summary of the differences in SULs recorded for brumated and non-brumated frogs that were translocated midway through the study (week 16) versus those that remained in captivity for 32-weeks.

**Table 7.** Model ranking table showing the set of Cormack-Jolly-Seber models used to test hypotheses and estimate survival (Φ) and recapture probabilities (p) in brumated and non-brumated frogs.