Female spadefoot toads do not discriminate against sterile hybrid males

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Background

- The spadefoot toads *Spea bombifrons* and *Spea multiplicata* co-occur in deserts of the southwestern US, where they sometimes hybridize\(^1\),\(^2\).
- First generation (F1) hybrid males are sterile\(^3\), thus females of both species should avoid mating with sterile F1 hybrid males because they are a dead end for fitness (no offspring).
- We performed two types of behavior experiments with females of *S. bombifrons* and *S. multiplicata* to assess whether they discriminate against hybrid male calls.

Experiment 1: Choice Tests

Do females choose pure species calls over hybrid calls?

Each female tested twice in circular pool with alternating synthetic calls from two speakers at edge (Fig. 1)
- Hybrid vs. conspecific call
- Hybrid vs. heterospecific call

Female choice indicated by swimming up to and touching platform containing a speaker (within 30 min)

Experiment 2: No-choice Tests

Do females associate less with hybrid calls than conspecific calls?

*Only performed with *S. multiplicata* females to date.*

- Single, continuous call (either conspecific or hybrid) from one speaker for 10 minutes.
- Recorded time spent in each zone (Fig. 3); pool choice (if any)

Conclusions

- Both experiments suggest that females are not discriminating between F1 hybrid and pure species male calls (Fig. 2, Fig. 4).
- Failure to discriminate against sterile hybrid males could cause a missed year of reproduction.

Future work

- Test heterospecific calls in Experiment 2 setup. Do females associate more or less with heterospecific calls than hybrid calls?
- Repeat Experiment 2 with *S. bombifrons* females. Do they also fail to discriminate against hybrid calls?

Females of neither species discriminate hybrid male calls from pure species male calls when presented in pairs.

References


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