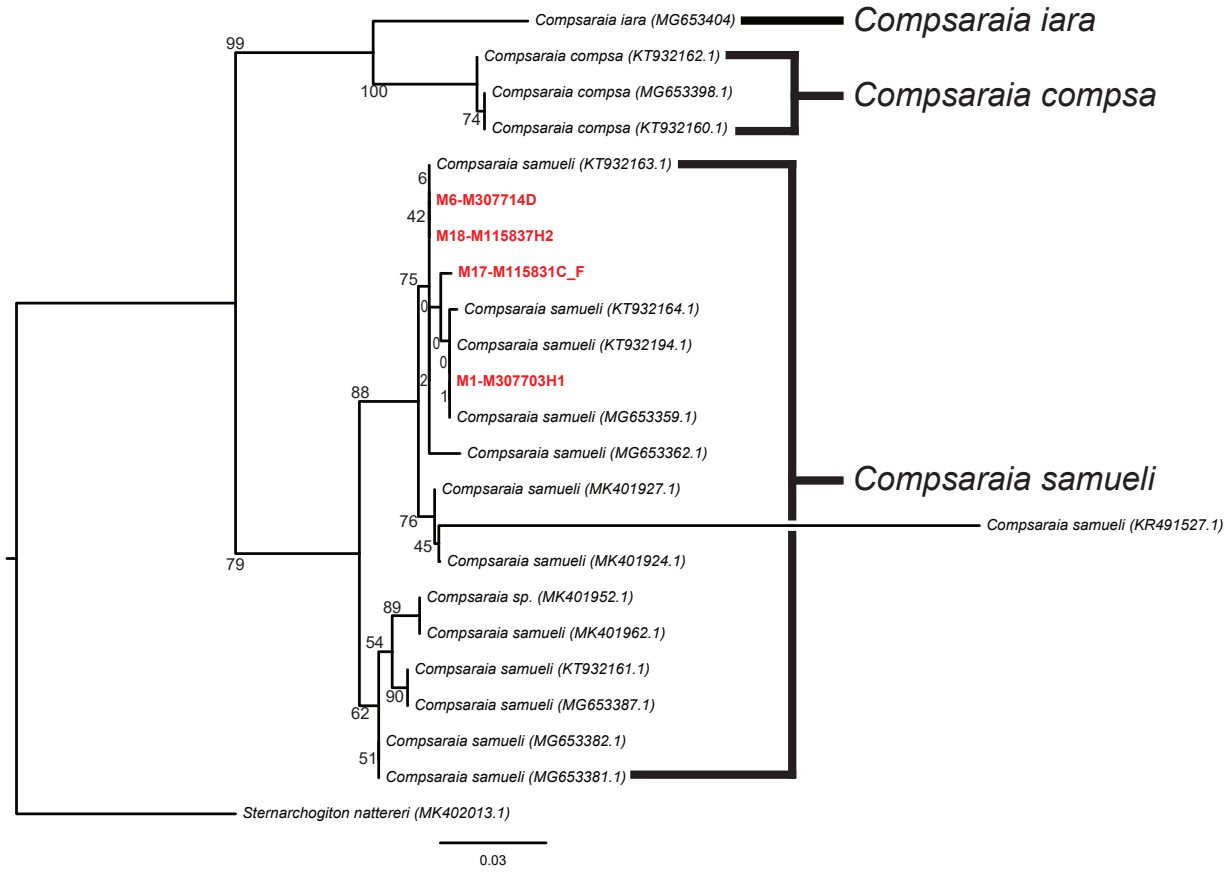

Fig. S1. Phylogeny indicates that individuals in this study were *C. samueli.* Phylogeny was built using COI sequence from all available *Compsaria* spp. sequences in the NCBI database, numbers in parentheses indicate the accession number for each sequence. Our samples are indicated by branches with M#-FishID (ex. M1-M307703H1) in red text. We included an outgroup on this phylogeny (*Sternarchogiton nattereri*), to root this tree. Numbers on the phylogeny indicate bootstrap support for each node. Values at the base of each clade have relatively high support values, therefore, this phylogeny supports that the individuals used in our study are *C. samueli*.

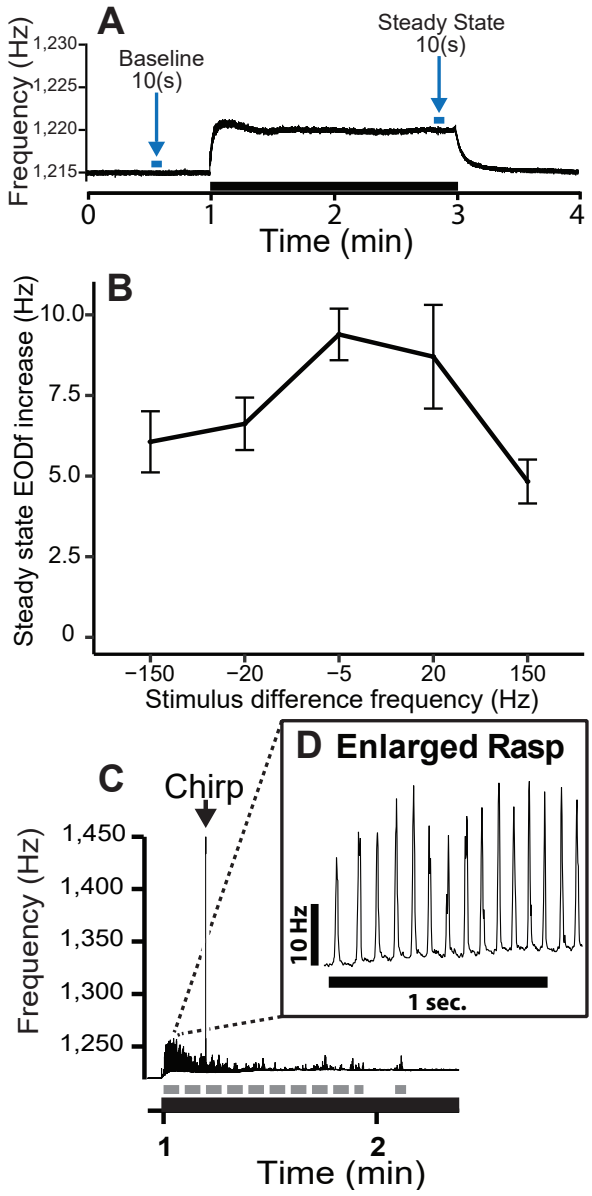

Fig. S2. Steady-state EODf increases and rasps produced in response to artificial playbacks. (A) Trace of EODf over time during a playback experiment in a chirp chamber. The stimulus was presented between 1 and 3 min (indicated by the thickened black bar over x axis). Steady state EODf increase was calculated by subtracting EODf in a 10-s window before playback from EODf in a 10-s window towards the end of the playback. (B) Steady state EODf increase, by stimulus frequency (N=22 individuals: mean ± SEM). Although the EODf increase tended to be somewhat greater in response to stimuli close in frequency to the fish's own EOD (i.e., -5 and +20 Hz), the effect of stimulus frequency on the EODf increase did not reach significance (RMANOVA [$F(4,105)=2.34$, $P=0.06$]. (C) EODf over time, during a rasp (small, but relatively long EOD oscillations) at the start of the stimulus presentation. The dark bar (only showing 1-2½ min) indicates the presence of a playback stimulus. A chirp is highlighted with an arrow. The rasp is denoted with a gray dashed line below the EOD trace. (D) Inset showing an expanded portion of the rasp.

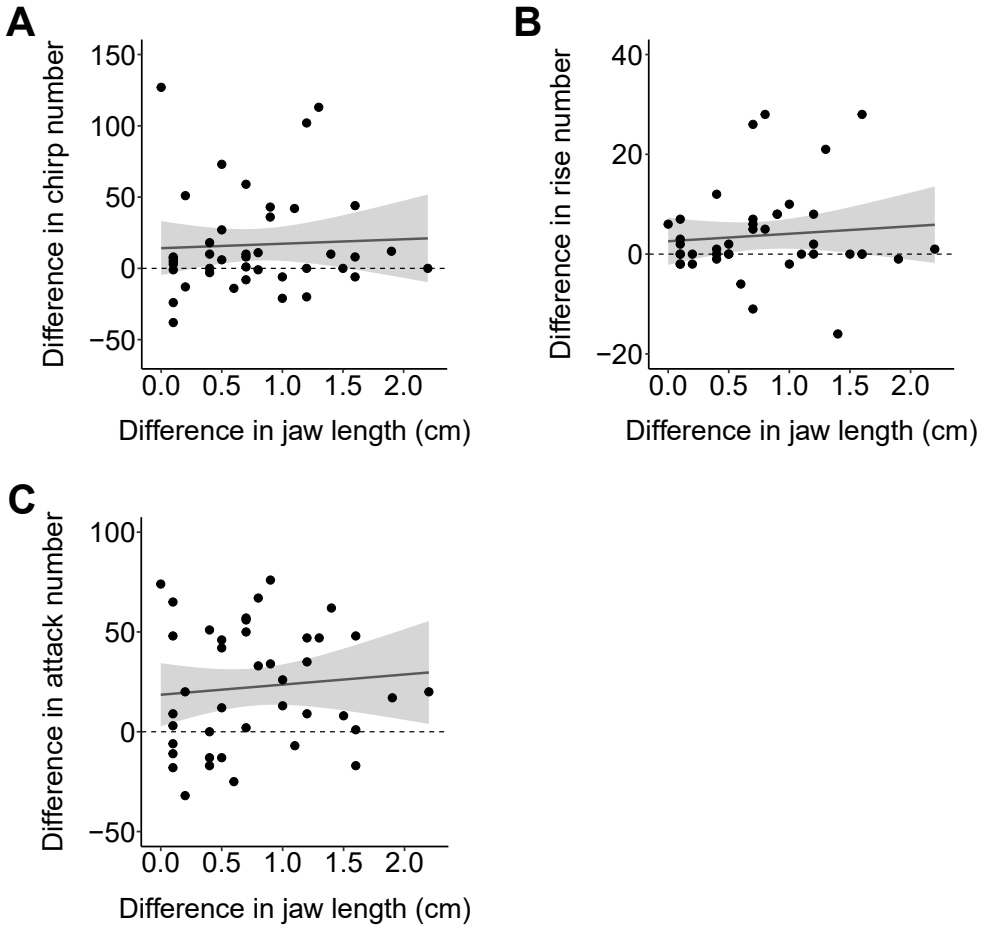

Fig. S3. Difference in jaw length is unrelated to the difference in EOD modulations or attacks. Within a trial (N=41 trials), the difference in jaw length between fish was unrelated to (A) the difference in number of chirps (LRM: ß=3.135, R^2=-0.023, *P*=0.761), rises (LRM: ß=1.503, R^2=-0.017, *P*=0.559), or (C) attacks (LRM: ß=5.436, R^2=-0.016, *P*=0.551). Each point represents the difference in jaw length between the two fish and the number of attacks and chirps for a single trial, with the longer-jawed fish as the reference. Light gray: 95% CI.

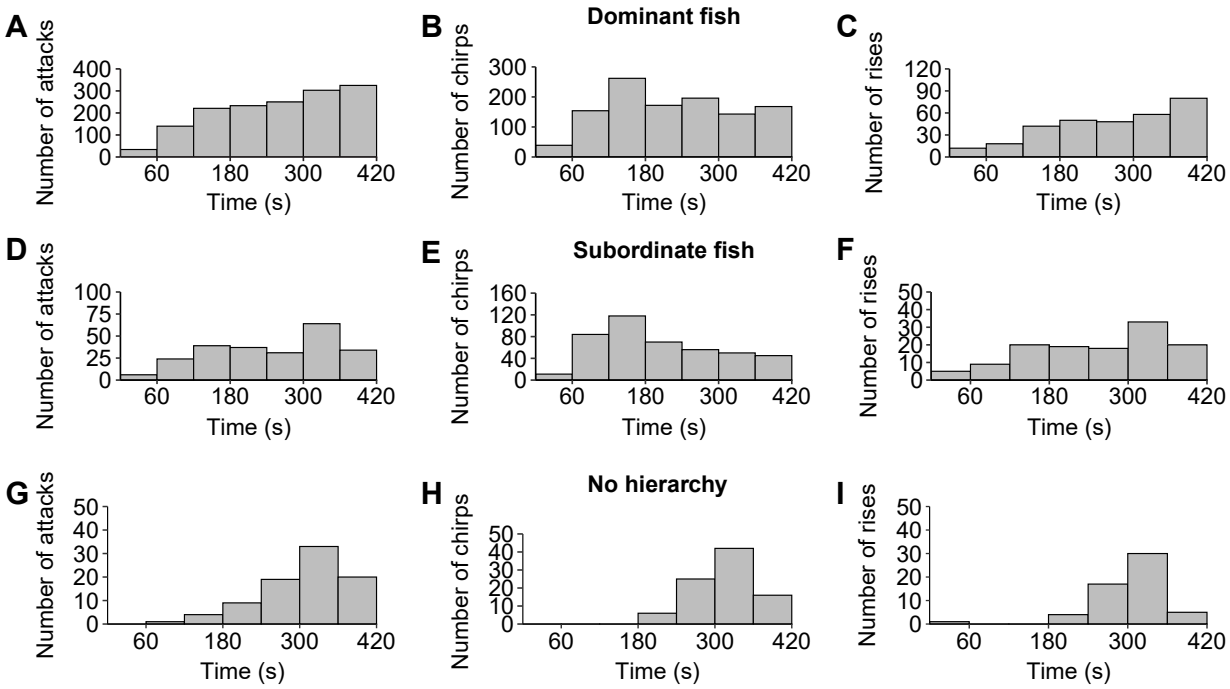

Fig. S4. Temporal dynamics of attacks and EOD modulations across trials. The summed number of attacks and EOD modulations over each minute of the trial was initially low and increased 1-2 min into the trial in both dominants (A-C) and subordinates (D-F). (A) Attacks increased throughout the 7-min trial in dominants (N=1506), (D) but remained relatively low in subordinates (N=235). Chirp rate peaked around 2-3 min and then decreased slightly through the remainder of the trial in both (B) dominants (N=1134) and (E) subordinates (N=434). (C) Rise rate closely mirrored the temporal dynamics of attacks in (C) dominants (N=308) and (F) subordinates (N=124). In trials with no hierarchy, there were little to no (G) attacks (N=86), (H) chirps (N=89), and (I) rises (N=57) in the first 1-3 min of the trial. Rates remained relatively low until 4-5 min into a trial and never reached a rate comparable to trials that had a clear dominant fish emerge.

Table S1. Ethogram

Behavior	Description
Nip	Brief contact using the jaws on the head or tail of the other fish
Lunge	Head thrusting towards the other fish without making physical contact
Charge	Rapid attack using the jaws from at least a half-body length away
Jaw gape	Jaws open widely as a display
Antiparallel swimming	Head-to-tail swimming for at least 2 s within a half of a body length
Parallel swimming	Head-to-head swimming for at least 2 s within a half of a body length
Shelter	Entering and staying in the shelter tube