Table S1. Standard length (SL), weight and tail fin coloration (principal components reflecting relative size and color) of male *Chrysiptera cyanea* in a female choice set-up. Males were selected to differ in coloration but were matched in size. Measures of both ornament size and color were used to define which male was termed bright and dull within a trial. Condition was calculated as residuals from a regression of weight (mg) on SL (mm).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Bright male | | Dull male | | Within trial contrast | |
|  | mean ± *SD* | range | mean ± *SD* | range | mean ± *SD* | range |
| **Tail coloration** |  |  |  |  |  |  |
| Ornament size (PC2) | 0.28 ± 1.17 | -3.58 - 2.04 | -0.25 ± 0.67 | -1.45 - 1.13 | 0.63 ± 0.67 | -0.60 - 2.04 |
| Ornament color (PC1) | 0.44 ± 0.54 | -0.80 - 1.24 | -0.35 ± 1.00 | -3.4 - 1 | 0.79 ± 0.83 | -0.72 - 2.59 |
| proportion orange | 0.54 ± 0.05 | 0.45 - 0.66 | 0.42 ± 0.06 | 0.21 - 0.52 | 0.12 ± 0.07 | -0.05 - 0.24 |
| L\* | 171 ± 11 | 144 - 200 | 184 ± 14 | 156 - 222 | -14 ± 13 | -41 - 23 |
| a\* | 153 ± 5 | 144 - 160 | 146 ± 7 | 129 - 155 | 7 ± 6 | -5 - 21 |
| b\* | 189 ± 10 | 169 - 210 | 168 ± 17 | 127 - 192 | 21 ± 14 | -5 - 45 |
| **Body size** |  |  |  |  |  |  |
| SL (mm) | 43.6 ± 1.8 | 39.6 - 47.4 | 43.2 ± 1.6 | 40.1 - 46.1 | 0.4 ± 1.2 | -2.3 - 2.1 |
| Tail length (mm) | 13.7 ± 0.7 | 12.5 - 14.9 | 13.3 ± 0.6 | 12.1 - 14.5 | 0.4 ± 0.8 | -1.0 - 2.2 |
| TL (mm) | 57.3 ± 2.3 | 52.1 - 61.7 | 56.5 ± 2.0 | 52.6 - 60.3 | 0.8 ± 1.5 | -1.7 - 3.1 |
| Weight (g) | 3.18 ± 0.39 | 2.68 - 4.26 | 3.23 ± 0.29 | 2.60 - 3.87 | -0.05 ± 0.23 | -0.39 - 0.62 |
| Condition (mg) | -52 ± 250 | -403 - 687 | 52 ± 190 | -246 - 372 | -104 ± 289 | -495 - 901 |

Table S2. Correlation matrix of variables entered into principal component analyses of male behavior in a female mate choice study in *Chrysiptera cyanea*. Variables are frequencies of approaches, fin displays and lead swims, the proportion of female visits that involved male courtship (courtship propensity) and the proportion of time a male spent in proximity to the female compartment in the experimental aquarium. Separate PCAs were carried out on male behavior when male-male competition was prevented (correlation coefficients left from diagonal) and when it was allowed (correlation coefficients right from diagonal).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Approach | Fin display | Lead swim | Courtship propensity | Association with female |
| Approach |  | 0.57 | 0.45 | 0.25 | 0.18 |
| Fin display | 0.60 |  | 0.35 | 0.08 | 0.22 |
| Lead swim | 0.38 | 0.30 |  | -0.07 | 0.02 |
| Courtship propensity | 0.21 | 0.10 | 0.08 |  | -0.17 |
| Association with female | 0.33 | 0.08 | -0.26 | 0.37 |  |

Table S3. Correlation matrix of variables entered into a principal component analysis of male color traits in a female mate choice study in *Chrysiptera cyanea*. Variables are the color channels L\*, a\*, b\* and the proportion of the tail fin that was orange.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | L\* | a\* | b\* | Proportion orange |
| L\* |  | -0.77 | -0.70 | -0.45 |
| a\* | -0.77 |  | 0.79 | 0.43 |
| b\* | -0.70 | 0.79 |  | 0.50 |
| Proportion orange | -0.45 | 0.43 | 0.50 |  |

Table S4. Generalized linear multiple regressions on female preference for male coloration in *Chrysiptera cyanea*. Female preference is quantified as either association with the more colorful male (bias in female position) or bias in courtship (fin displays and sigmoid displays). Male coloration (size and color of the orange tail ornament) is quantified as the contrast between the bright and dull males of a trial. Potential confounding variables that may have affected female preference were within-trial contrast (bright minus dull male) in male standard length (SL), male condition and mail tail length. A separate GLM was fitted to each of the three variables of female preference and for each step of the experiment, respectively. All estimates are given on logit scale. Predictor variables were centered prior to analysis and SL, condition and tail length were standardized to have a standard deviation of one. The model intercepts therefore represent female preference given average color contrast between males, with an intercept of zero expected in the absence of female preference for male coloration.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Intercept | | Ornament size | | Ornament color | | SL | | Condition | | Tail length | |
| **Female preference** | *N* | Estimate ± *SE* | *P* | Estimate ± *SE* | *P* | Estimate ± *SE* | *P* | Estimate ± *SE* | *P* | Estimate ± *SE* | *P* | Estimate ± *SE* | *P* |
| **Step 1** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female position | 25 | -0.06 ± 0.23 | 0.80 | 0.04 ± 0.31 | 0.90 | 0.14 ± 0.32 | 0.66 | -0.08 ± 0.34 | 0.81 | 0.07 ± 0.35 | 0.84 | 0.15 ± 0.25 | 0.57 |
| Fin displays | 23 | 0.02 ± 0.18 | 0.92 | -0.09 ± 0.22 | 0.67 | 0.41 ± 0.23 | 0.09 | -0.33 ± 0.36 | 0.37 | -0.03 ± 0.40 | 0.95 | -0.19 ± 0.17 | 0.28 |
| Sigmoid displays | 16 | 0.36 ± 0.44 | 0.43 | 0.17 ± 0.53 | 0.75 | 0.84 ± 0.67 | 0.23 | -0.66 ± 0.69 | 0.36 | -0.34 ± 0.79 | 0.68 | 0.96 ± 0.53 | 0.10 |
| **Step 2** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female position | 22 | 0.10 ± 0.24 | 0.69 | -0.50 ± 0.37 | 0.19 | -0.06 ± 0.34 | 0.87 | 0.17 ± 0.36 | 0.64 | -0.09 ± 0.32 | 0.77 | -0.02 ± 0.24 | 0.92 |
| Fin displays | 22 | 0.01 ± 0.21 | 0.97 | -0.33 ± 0.26 | 0.22 | -0.07 ± 0.30 | 0.82 | 0.21 ± 0.37 | 0.57 | 0.31 ± 0.33 | 0.37 | 0.00 ± 0.20 | 0.99 |