**Codebook**

**First\_author**

Last name of first authors

**Year\_published**

The year published

**Title**

The title of the study

**Paper\_ID**

A unique ID per included paper

**Study\_ID**

A unique ID per study

**Group\_ID**

A unique ID for each group of animals

**Effectsize\_ID**

A unique ID for each effect size

**Species**

Latin species name

**Class**

Taxonomic class

**Rearing\_type**

Rearing of animals

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Wild | Were measures done in the wild |
| 2 | Wild caught | Wild animals brought into the lab |
| 3 | Agricultural/aquaculture | Is the animal reared in agriculture/aquaculture environments |
| 4 | Lab | Lab-reared animals |
| 5 | Zoo | Zoological animals |
| 6 | Other/unclear | Other/unclear |

**Competition\_order**

In what order were focal males competing? Note that if focal males mated first but P2 was reported, P1 was calculated by inversing P2 (i.e., 100 – P2).

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | P1 | Focal males competed first (sperm defense) |
| 2 | P2 | Focal males competed second (sperm offence) |
| 3 | Random mix | Males competed at the same time (e.g., in a brood spawning/external fertilizing species, or all sperm were transferred in artificial insemination at the same time) |
| 4 | Both | Focal males (i.e., the same males) were mated in both positions 1 and 2 and paternity was recorded for each |
| 5 | Other/unclear | Other situations/ unclear situations |

**Competition\_order\_notes**

**Perception\_competition**

Did the animals perceive any competition prior to mating (not including males housed in single-sex)?

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Yes | Yes, males were exposed to at least one other competitor male prior to the fitness assay (not including single sex cages where males were not able to mate) |
| 2 | No | No, males were not exposed to competitor males (e.g., were housed in isolation)/were housed in single sex cages |
| 3 | Other | Includes artificial insemination situations where traits are directly manipulated (e.g., sperm number) so shouldn’t be affected by males prior experience |
| 4 | Unclear | Unclear |

**Perception\_competition\_notes**

**Fertilisation\_mode**

Mode of fertilisation

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Internal | Internal fertilisation |
| 2 | External | External fertilisation |

**PC\_variation\_level**

Level of post-copulatory trait variation

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Variation between males | Variation between males (i.e., males aren’t standardised so may vary due to genetics, environments (including experimental treatments), age etc. May also vary due to selection lines |
| 2 | Variation between ejaculates | Males are standardised but ejaculates are either experimentally manipulated (e.g., number of sperm transferred) or the fastest and slowest sperm are selected for fertilization within an ejaculate etc. |
| 3 | Other | Other cause of variation (e.g., different populations) |
| 4 | Unclear | Unclear |

**PC\_variation\_cause2**

What caused the variation in PC traits

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Natural | ‘Natural variation’ that may be caused by both genetic and environmental variation. This is found in wild caught animals |
| 2 | Environment | Environmental plasticity |
| 3 | Age | Individuals vary in age |
| 4 | Manipulation | Direct manipulation (e.g., by diluting sperm). Note that Manipulations of mating duration or time between matings are not included. |
| 5 | Genetic only | Genetic variation only (e.g., isolines, selection lines, or outbred lab stocks) where environment was controlled for. Note that this could also be due to epigenetics if population was only F1 etc from wild caught |
| 6 | Other/unclear | Other cause of variation |

**PC\_variation\_nature**

Is the variation (either at the ejaculate or male level) natural (e.g., no interference/manipulation – this includes differences between ages, populations etc) or unnatural (e.g., experimental manipulation, selection lines etc)

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Natural | Natural variation with no manipulations (can include natural variation between populations etc) |
| 2 | Unnatural | Any type of manipulation to the male or ejaculate |
| 3 | Unclear/other | Unclear/other |

**Study\_design**

The study design used to assess the relationship between post-copulatory traits and fitness in individuals

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Same ejaculate | Same ejaculate was used to measure both the PC trait and fitness |
| 2 | Same individual | Traits and fitness measured from different ejaculates from the same individual |
| 3 | Split ejaculate | Split the ejaculate and took the slowest and fastest sperm within that ejaculate. Or manipulated sperm number from the ejaculate and used sperm to fertilise multiple females. |
| 4 | Other | Other designs, including testes and accessory gland size that is not dependent on ejaculate. Also when males split into broad treatment groups. |
| 5 | Unclear | Unclear |

**Study\_design\_notes**

**Fertilisation\_method**

The method used to fertilise eggs

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Natural | Males naturally mated |
| 2 | Artificial insemination | IVF etc |
| 3 | Other/unclear | Other/unclear |

**PC\_type**

Type of post-copulatory trait

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Sperm number | Number of sperm within an ejaculate (not concentration, mating duration, or time between matings) |
| 2 | Testes | Testes size |
| 3 | Sperm length | Any measure of length; total sperm length, flagella length, midpiece length etc (not ratios) |
| 4 | Sperm velocity | Measures of sperm velocity/movement (not if sperm were motile or not) |
| 5 | Sperm normality | If the sperm were of normal morphology/were motile and viable etc |
| 6 | Ejaculate size | Total ejaculate or spermatophore size (sperm and seminal fluid included, not mating duration or time between matings) |
| 7 | Seminal fluid quantity | Total seminal fluid quantity (minus sperm), specific sfp/acp quantity |
| 8 | Accessory gland | Accessory gland size |

**PC\_type\_notes**

Specific notes about PC traits. If testes and accessory gland size was measured, was this corrected for body size?

**Precop\_correlation**

Was a relationship between pre-copulatory traits (including body size) and post-copulatory traits reported?

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Not reported | Did not report a relationship |
| 2 | Positive | Positive relationship |
| 3 | Negative | Negative relationship |
| 4 | Multiple directions | Mutliple directions between multiple traits |
| 4 | No relationship | A relationship was tested for, but there was no relationship |
| 5 | Controlled for | Controlled for by taking principal components, standardising within other traits etc |

**Precop\_correlation\_notes**

What was the pre-copulatory trait?

**Postcop\_correlation**

Was a relationship between other post-copulatory traits reported?

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | Not reported | Did not report a relationship |
| 2 | Positive | Positive relationship |
| 3 | Negative | Negative relationship |
| 4 | Multiple directions | Multiple directions between multiple traits |
| 4 | No relationship | A relationship was tested for, but there was no relationship |
| 5 | Controlled for | Controlled for by taking principal components, standardising within other traits, including all traits in the model etc |

**Postcop \_correlation\_notes**

What was the post-copulatory trait

**Coin**

Does high = better or does the effect size need to be flipped?

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | No | No, direction is predicted that ‘higher is better’ |
| 2 | Yes | Yes, direction is predicted that ‘lower = better’ |
| 3 | Unclear | Unclear |

**Inverse\_precedence**

Does the inverse of the sperm precedence need to be calculated (i.e, focal males mated first but P2 was reported)?

|  |  |  |
| --- | --- | --- |
| Code | Human readable | Description |
| 1 | No | No, mating order corresponds to the sperm precedence reported |
| 2 | Yes | Yes, sperm precedence reported for the opposite of the order the focal males mated |
| 3 | Unclear | Unclear |

**N**

Number of unique pairs of matings (most of the time this is the number of focal males but sometimes the same focal male is competed against multiple different competitors)

**N\_dependent**

Was sample size independent (i.e., the focal individuals weren’t competing against each other in the same female) or dependent (i.e., relationship between post-cop trait and paternity was reported for both individuals within one female). Note that any study that reports p1 or p2 is inherently independent, or studies that report model output the included mating order in the model).

**Corr\_r**

Correlation coefficient between PC trait and paternity share

**Estimate**

Estimate/slope

**SE**

SE of estimate

**n\_groups**

Number of groups compared or ‘continuous’ if there weren’t discrete groups

**n\_group\_notes**

If between categorical groups, was sample size balanced?

**CI\_lower**

Lower 95% CI

**CI\_higher**

Higher 95% CI

**F**

F test statistic

**F\_direction**

What direction was the effect. Positive = higher PC trait corresponds to higher paternity. negative = higher PC trait corresponds to lower paternity. Unclear = did not state and no figures etc (generally for non-significant effects)

**F\_n\_groups**

Number of groups compared or ‘continuous’ if there weren’t discrete groups

**F\_n\_balanced**

If discrete groups, was sample size balanced. If not, what were the two sample sizes

**t**

t test statistic

**F\_direction**

What direction was the effect. Positive = higher PC trait corresponds to higher paternity. negative = higher PC trait corresponds to lower paternity. Unclear = did not state and no figures etc (generally for non-significant effects)

**t\_n\_groups**

Number of groups compared or ‘continuous’ if there weren’t discrete groups

**t\_n\_balanced**

If discrete groups, was sample size balanced. If not, what were the two sample sizes

**p**

p values

**p\_direction**

What direction was the effect. Positive = higher PC trait corresponds to higher paternity. negative = higher PC trait corresponds to lower paternity. Unclear = did not state and no figures etc (generally for non-significant effects)

**p\_n\_groups**

Number of groups compared or ‘continuous’ if there weren’t discrete groups

**p\_n\_balanced**

If discrete groups, was sample size balanced. If not, what were the two sample sizes

**mean\_low**

**n\_low**

**SD\_low**

**mean\_high**

**n\_high**

**SD\_high**

**Data\_location**

**Notes**

Notes