

Reproductive Checklist for Diagnosing the Point of Reproductive Failure

General

1) Natural history

- Is this a seasonal species?
- What is the normal age of puberty for this species?
- What is the normal age of sexual maturity for the species?
- What is the age of senescence for the species?
- What is the species' mating system/reproductive strategy?

2) Individual history

- Age
- Rearing
- Transfers
- Experience of parental care?
- What is the individual's demeanour?
- What is the general health of the individual?
 - Do they have any chronic conditions?
 - Have they received any hormone treatments?
 - Do they have any skeletal abnormalities?
 - Has an infectious disease screening been carried out?
 - What is their weight and body condition score?
- Imprinting/species appropriate behaviours?
- Is there a history of aggression towards conspecifics or mates?

3) Individual reproductive history

- Has a reproductive health workup been done recently?
 - What were the findings?
 - What have historic workups found?
 - Is there a history of reproductive disease or pathology?
 - Is the genital/reproductive morphology sound?
- Has this animal received any contraceptive treatments?

4) Social considerations

- Does the social structure resemble natural history?
 - Solitary, paired, grouped, harem, multi-male, multi-female?
- Which conspecifics are housed with the individual?
 - If relevant, where is the individual in the hierarchy?
- Have new individuals been introduced recently?
- When have the individuals been allowed mate access?
- Is your pair compatible?

5) Husbandry

- Is their diet species specific and nutritionally sound?
 - Are they fed on a natural feeding cycle e.g. carcass fed?
 - Are they fed supplements? Concentrates?
- Are they given any enrichment?
- What are potential stressors?
 - Presence of predators?
 - Social stress?
 - Stress from the public?
- Are they in a single or mixed species exhibit?
- Do they have access to an indoor/outdoor enclosure?
- Is there UVB provision?
- Is a light cycle being simulated?
- Do they have access to a nest box?
- Are hiding/escape areas provided?
- What substrate do they have?
- What heat provision is available?
- Does the enclosure have the appropriate humidity conditions?
- Are the right environmental cues to induce mating/courtship provided?
- Are there any pollutants in the surrounding area?
- Is there any background toxicity?

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Female

1) Natural history

- What are the signs of proestrus and oestrus in this species?
- Do we know what a normal cycle looks like in this species?
 - Are induced or spontaneous ovulators? Both?
 - What is the normal inter-oestrus interval?
- What are the signs of receptivity in this species?

2) Individual reproductive history

- Has endocrine monitoring been carried out?
 - What were the results?
- Does the female have a record of previous conception?
 - What was the age at first reproduction?
 - Does she have a history of abortions?
- Does the female have a record of previous parturition?
 - Does she have a history of dystocia?
 - Does she have a history of stillbirths?
 - What are historic litter sizes?
 - Is there a record of neonatal death?
 - Are there any incidences of congenital abnormalities?
 - Does she have a history of infanticide?
- Has the female ever had pseudopregnancies?
- What is the length of her inter-birth interval?
- Has she ever suffered from mastitis?
- Does she have a history of successful rearing?

3) Current reproduction

- Are the appropriate courtship and mating behaviours observed?
- Describe breeding events
 - Is there evidence of intromission?
- Has the male previously bred with a different female?

Male

1) Natural history

- Do we know what average testosterone concentrations are in breeding males of this species?
- Do we know what normal sperm morphology looks like in this species?

2) Individual reproductive history

- Has endocrine monitoring been carried out?
 - What were the results?
- Sperm quality?
- Does the male have a record of previously siring offspring?
 - What was the age at first reproduction?
 - What were the fate of the offspring?
 - Are there any incidences of congenital abnormalities?
 - Does he have a history of infanticide?
- Does he have a history of successful rearing?

3) Current reproduction

- Are the appropriate courtship and mating behaviours observed?
- Describe breeding events
 - Is there evidence of intromission?
- Has the female previously bred with a different male?

START

What is the problem?

What diagnostics can be used?

What treatments can be used?

What are the action items?

Who are the point people?



REFERENCES

Christensen, B. (2019) Female Infertility in Zoo Animals in *Fowler's Zoo and Wild Animal Medicine: Current Therapy*. 9th Ed. St. Louis:Elsevier, pp124-129