FEMALES: Macroscopic and microscopic descriptions of the phases in the female reproductive cycle of fishes. Timing within each phase is species-dependent. Some criteria listed for phases may vary depending on species, reproductive strategy or water temperature. Sub-phases that apply to all fishes are listed; additional sub-phases can be defined by individual researchers. Oocyte abbreviations: CA—cortical alveolar; GVBD—germinal vesicle breakdown; GVM—germinal vesicle migration; OM—oocyte maturation; PG—primary growth; POF—postovulatory follicle complex; Vtg1—primary vitellogenic; Vtg2—secondary vitellogenic; Vtg3—tertiary vitellogenic.

Phase	Previous Terminology	Macroscopic and Histological Features
Immature Never spawned	Immature, Virgin	Small ovaries, often clear, blood vessels indistinct. Only oogonia and PG oocytes present. No atresia or muscle bundles. Thin ovarian wall and little space between oocytes.
Developing Ovaries beginning to develop, but not ready to spawn	Maturing, early developing, early maturation, mid maturation, ripening, previtellogenic	Enlarging ovaries, blood vessels becoming more distinct. PG, CA, Vtg1 and Vtg2 oocytes present. No evidence of POF or Vtg3 oocytes. Some atresia can be present. *Sub-phase:* Early Developing—PG and CA oocytes only.
Spawning Capable Fish are developmentally and physiologically able to spawn in this cycle.	Mature, late developing, late maturation, late ripening, total maturation, gravid, vitellogeneic, ripe, partially spent, fully developed, pre-spawning, running ripe, FOM, spawning, gravid, ovulated	Large ovaries, blood vessels prominent. Individual oocytes visible macroscopically. Vtg3 oocytes present or POF present in batch spawners. Atresia of vitellogenic and/or hydrated oocytes may be present. Early stages of OM can be present. *Sub-phase:* Actively Spawning—Oocytes undergoing late GVM, GVBD, hydration or ovulation.
Regressing Cessation of spawning	Spent, regression, post spawning, recovering	Flaccid ovaries, blood vessels prominent. Atresia (any stage) and POF present. Some CA and/or vitellogenic (Vtg1, Vtg2) oocytes present.
Regenerating Sexually mature, reproductively inactive	Resting, regressed, recovering, inactive	Small ovaries, blood vessels reduced but present. Only oogonia and PG oocytes present. Muscle bundles, enlarged blood vessels, thick ovarian wall and/or gamma, delta atresia or old, degenerating POF may be present.

MALES: Macroscopic and microscopic descriptions of the phases in the male reproductive cycle of fishes. Timing within each phase is species-dependent. Some criteria listed for phases may vary depending on species, reproductive strategy or water temperature. Sub-phases that apply to all fishes are listed; additional sub-phases can be defined by individual researchers. Abbreviations: GE—germinal epithelium; Sc1—primary spermatocyte; Sc2—secondary spermatocyte; Sg1—primary spermatogonia; Sg2—secondary spermatogonia; St—spermatid; Sz—spermatozoa.

Phase	Previous Terminology	Macroscopic and Histological Features
Immature Never spawned	Immature, Virgin	Small testes, often clear and thread-like. Only Sg1 present, no lumen in lobules.
Developing Testes beginning to grow and develop	Maturing, early developing, early maturation, ripening,	Small testes but easily identified. Spermatocysts evident along lobules. Sg2, Sc1, Sc2, St and Sz can be present in spermatocysts. Sz not present in lumen of lobules or sperm ducts. GE continuous throughout. *Sub-phase*: Early Developing—Sg1, Sg2 and Sc1 only.
Spawning Capable Fish are developmentally and physiologically able to spawn in this cycle.	Late developing, mid maturation, late maturation, late ripening, ripe, partially spent, running ripe, spawning	Large and firm testes. Sz in lumen of lobules and/or sperm ducts. All stages of spermatogenesis (Sg2, Sc, St, Sz) can be present. Spermatocysts throughout testis, active spermatogenesis. GE can be continuous or discontinuous. *Macroscopic Sub-phase:* Actively Spawning—milt released with gentle pressure on abdomen. *Histological Sub-phases (based on structure of GE):* Early GE—continuous GE in all spermatocysts throughout testes; Mid GE—continuous GE in spermatocysts at testis periphery, discontinuous GE in spermatocysts near ducts; Late GE—discontinuous GE in all spermatocysts throughout testes.
Regressing Cessation of spawning	Spent, regression, post spawning, recovering	Small and flaccid testes, milt not released with pressure. Residual Sz present in lumen of lobules and sperm ducts. Widely scattered spermatocysts near periphery containing St or Sz. Little to no active spermatogenesis. Spermatogonial proliferation and regeneration of GE common in periphery of testes.
Regenerating Sexually mature, reproductively inactive	Resting, regressed, recovering, inactive	Small testes. No spermatocysts. Lumen of lobule often nonexistent. Proliferation of spermatogonia throughout testes. GE continuous throughout. Small amount of residual Sz occasionally present in lumen of lobules and sperm duct.