

## RINGKASAN

Ikan lukas merupakan salah satu jenis ikan sungai yang berhabitat di bagian hulu Sungai Serayu dan menjadi salah satu sumber daya perikanan potensial di Kabupaten Banyumas. Penangkapan ikan lukas di Sungai Serayu secara terus menerus berpotensi mengakibatkan penurunan populasi secara signifikan. Aspek reproduksi merupakan salah satu aspek yang penting dalam pelestarian ikan lukas yang berkelanjutan. Gonad merupakan organ reproduksi primer yang menghasilkan sel telur pada individu betina dan sel sperma pada individu jantan. Perkembangan gonad dapat ditinjau secara morfologi maupun histologi. Pengamatan gonad secara histologi akan menghasilkan gambaran mikroanatomi secara lebih jelas dan mendetail dibandingkan dengan pengamatan secara morfologi. Selain itu juga dilakukan analisis kualitas milt yang merupakan informasi penting yang berguna untuk mengetahui status kesuburan organ reproduksi jantan. Penelitian ini bertujuan untuk mengetahui kualitas milt dan struktur histologis testis ikan lukas pada 0, 1, 2, dan 3 minggu pascamijah.

Penelitian dilakukan dengan metode observasi. Pengambilan sampel dilakukan secara acak terpilih (*purposive random sampling*). Materi penelitian yaitu ikan lukas jantan matang gonad sebanyak 24 ekor, yang diperoleh dari kolam budidaya milik petani ikan di area persawahan Kecamatan Cilongok, Kabupaten Banyumas. Ikan sampel dibagi menjadi 4 kelompok, masing-masing berisi 6 ekor. Pengamatan kualitas milt dilakukan pada minggu ke- 0 (M0), 1 (M1), 2 (M2), dan 3 (M3). Pada setiap pengambilan sampel, sebanyak 3 dari 6 ekor ikan dikorbankan untuk pembuatan sediaan histologis testis. Data penelitian berupa data kualitatif dianalisis secara deskriptif dan data kuantitatif dianalisis menggunakan korelasi dan regresi.

Hasil pengukuran volume milt pada minggu ke-0, 1, 2, dan 3 pascamijah berturut-turut adalah  $0,413 \pm 0,308$  mL;  $0,042 \pm 0,054$  mL;  $0,018 \pm 0,008$  mL; dan  $0,005 \pm 0,005$  mL, pH:  $7,8 \pm 0,41$ ;  $7,3 \pm 0,52$ ;  $7 \pm 0,00$ ;  $7 \pm 0,00$ , dengan warna milt yang teramati putih keabu-abuan (*watery*) hingga putih susu. Motilitas spermatozoa pada periode yang sama berturut-turut:  $96,17 \pm 8,01\%$ ;  $78,83 \pm 26,23\%$ ;  $90,00 \pm 22,36\%$ ; dan  $71,67 \pm 7,64\%$ , dengan skor motilitas spermatozoa yang diperoleh adalah 4, dan kepadatan spermatozoa per mL milt:  $17,9 \times 10^{10} \pm 13,4 \times 10^{10}$  sel/mL;  $7,26 \times 10^{10} \pm 3,45 \times 10^{10}$  sel/mL;  $4,82 \times 10^{10} \pm 1,90 \times 10^{10}$  sel/mL; dan  $1,89 \times 10^{10} \pm 1,65 \times 10^{10}$  sel/mL. Pengamatan histologis testis menunjukkan bahwa ikan lukas termasuk ke dalam tipe *asynchronous spawner*. Proporsi lobula masing-masing stadium spermatogenik dari minggu ke-0, 1, 2, hingga minggu ke- 3 bersifat fluktuatif; proporsi lobula spermatogonia, spermatosit primer, spermatosit sekunder, dan spermatid mengalami penurunan pada minggu ke-1 pascamijah (M1) kemudian meningkat hingga minggu ke-3 (M2 dan M3); proporsi lobula spermatozoa mengalami kenaikan pada minggu ke-1 kemudian menurun hingga minggu ke-3 (M2 dan M3) dengan persamaan  $y = -0,1679x + 0,7664$  dan nilai koefisien determinasi ( $R^2$ ) sebesar 0,6042. Berdasarkan hasil penelitian maka dapat disimpulkan bahwa milt ikan lukas pascamijah pada penelitian ini kurang optimum, serta gambaran histologis testis menunjukkan bahwa semua stadium spermatogenik teramati pada testis ikan lukas dengan kelimpahan yang bervariasi selama pengamatan.

Kata kunci: *histologis testis, ikan lukas, kualitas milt, pascamijah*

## SUMMARY

Lukas fish is one of the freshwater fish that inhabits the upper stream of the Serayu River and is one of the potential fishery resources in the Banyumas Regency. Continuous fishing of lukas fish in the Serayu River has the potential to result in a significant population decline. Reproduction is one of the important aspects of sustainable lukas fish population conservation. Gonads are primary reproductive organs that produce eggs in female individuals and sperm cells in male individuals. Gonad development can be evaluated from several aspects including the processes that occur in the gonads. The stages of maturity of fish gonads can be examined morphologically and histologically. Histological observation of gonads will produce a clearer and more detailed picture of the microanatomy compared to morphological observations. In addition, milt quality analysis is also carried out which is important information useful for determining the fertility status of male reproductive organs. Some parameters that are commonly assessed include milt color and pH, density/concentration, motility, and morphology of spermatozoa. This study aims to determine the quality of milt and the histological structure of lukas fish testes after spawning.

The research was conducted using the observational method. Sampling was done by purposive random sampling. The research material was 24 gonadally mature male lukas fish, obtained from a fish farmer's pond in the rice field area of Cilongok District, Banyumas Regency. Fish samples were divided into 4 groups, each containing 6 fish. Observation of milt quality was conducted at week 0 (M1), 1 (M2), 2 (M2), dan 3 (M3). At each sampling time 3 out of 6 fish were sacrificed and processed for histological preparation of the testes. Research data in form of qualitative was analyzed descriptively and the quantitative data were analyzed using correlation and regression.

The results showed that milt volume at week 0, 1, 2, and 3 post-spawning were  $0.413 \pm 0.308$  mL,  $0.042 \pm 0.054$  mL,  $0.018 \pm 0.008$  mL, and  $0.005 \pm 0.005$  mL respectively. The milt were pH:  $7,8 \pm 0,41$ ;  $7,3 \pm 0,52$ ;  $7 \pm 0,00$ ;  $7 \pm 0,00$ , milt color: grayish white (watery) - milky white. Spermatozoa motility at week 0, 1, 2, and 3 post-harvest were  $96.17 \pm 8.01\%$ ,  $78.83 \pm 26.23\%$ ,  $90.00 \pm 22.36\%$ , and  $71.67 \pm 7.64\%$ , with the spermatozoa motility score of 4. Spermatozoa density were  $17.9 \times 10^{10} \pm 13.4 \times 10^{10}$  cells/mL,  $7.26 \times 10^{10} \pm 3.45 \times 10^{10}$  cells/mL,  $4.82 \times 10^{10} \pm 1.90 \times 10^{10}$  cells/mL, and  $1.89 \times 10^{10} \pm 1.65 \times 10^{10}$  cells/mL. Histological observations of the testes showed that lukas fish belongs to the asynchronous spawner type. The proportion of lobules of each spermatogenic stage from week 0, 1, 2, to week 3 was fluctuated; the lobules proportion of spermatogonia, primary spermatocytes, secondary spermatocytes, and spermatids decreased in week 1 post-harvest (M1) then increased until week 3 (M2 and M3); the lobules proportion of spermatozoa increased in week 1 and decreased until week 3 (M2 and M3) with the equation of  $y = -0.1679x + 0.7664$  and the coefficient of determination ( $R^2$ ) of 0.6042. Based on the results, it can be concluded that the post-harvest lukas fish milt in this study is less than optimal, and the histological description of the testes shows that all spermatogenic stages are observed in lukas fish testes with varying abundance during observation.

Keywords: lukas fish, milt quality, post-harvest, testicular histology