1.6 Hipotesis

1. Terdapat perbedaan aspek biologi yang meliputi densitas, morfometrik, tipe pertumbuhan dan faktor kondisi kerang simping (*A. pleuronectes*) di perairan Teluk Bone dan Selat Makassar.
2. Terdapat perbedaan aspek reproduksi yang meliputi tingkat sebaran ukuran gonad, indeks kematangan gonad (IKG), ukuran pertama kali matang gonad, tingkat kematangan gonad (TKG), kerang simping (*A. pleuronectes*) di perairan Teluk Bone dan Selat Makassar.
3. Karakteristik perairan Teluk Bone dan Selat Makassar memberikan pengaruh yang berbeda bagi pertumbuhan dan reproduksi kerang simping (*A. pleuronectes*).

1.7 Kebaruan Penelitian

1. Adanya informasi tentang aspek biologi dan reproduksi kerang simping (*A. pleuronectes*) di Teluk Bone dan Selat Makassar.
2. Adanya informasi awal tentang karakteristik habitat kerang simping (*A. pleuronectes*) di Teluk Bone dan Selat Makassar.

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Analisis perubahan diameter telur kerang simping pada berbagai tahap kematangan gonad menunjukkan peningkatan yang signifikan dari TKG I hingga TKG IV, khususnya pada individu betina. Peningkatan ini sejalan dengan pertumbuhan oosit selama oogenesis, yang dikaitkan dengan aktivitas sintesis dalam gonad yang meningkat seiring dengan proses vitelogenesis, yaitu tahap ketika oosit mengakumulasi nutrisi dan material lain yang penting untuk perkembangan embrio. Pada tahap ini, oosit betina menunjukkan peningkatan ukuran yang signifikan, mencapai puncaknya pada TKG IV, yang merupakan fase kritis dalam siklus reproduksi kerang (Kapranova et al., 2019).

3.5 Kesimpulan

Penelitian ini menunjukkan perbedaan dalam perkembangan gonad kerang simping (*A. pleuronectes*) dari Teluk Bone dan Selat Makassar. Sebaran ukuran gonad di Teluk Bone lebih merata dan cenderung lebih besar sepanjang tahun, dengan nilai IKG yang lebih tinggi dan stabil, mencerminkan kondisi lingkungan yang mendukung perkembangan gonad secara optimal. Sebaliknya, di Selat Makassar, meskipun pada beberapa bulan bobot gonad lebih tinggi, sebaran ukuran tidak konsisten, dan nilai IKG cenderung fluktuatif.

Tingkat kematangan gonad menunjukkan bahwa perkembangan gonad kerang simping di Teluk Bone lebih optimal dibandingkan di Selat Makassar, sebagaimana tercermin dari nilai IKG yang lebih tinggi dan stabil. Pada tahap perkembangan gonad yang lebih lanjut, seperti Tahap IV dan V, Teluk Bone memiliki IKG yang lebih tinggi, menunjukkan bahwa sebagian besar individu telah mencapai kematangan gonad penuh dengan kandungan gamet yang padat. Sebaliknya, di Selat Makassar, banyak individu yang masih berada pada Tahap III atau awal Tahap IV, dengan nilai IKG yang lebih rendah, menandakan perkembangan gonad yang kurang optimal.

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pada siklus nutrien yang penting bagi kesehatan ekosistem laut (Narayan & Pandolfi, 2010). Proses deposisi dan transportasi sedimen di Teluk Bone dan Selat Makassar juga memainkan peran penting. Di wilayah pesisir, partikel kasar seperti pasir diendapkan oleh arus kuat dan gelombang tinggi, sedangkan sedimen halus seperti lempung diendapkan di perairan yang lebih tenang dengan energi yang lebih rendah. Penelitian menunjukkan bahwa perbedaan dalam mekanisme deposisi ini dapat memengaruhi distribusi dan komposisi substrat dasar perairan, dengan substrat kasar mendukung komunitas yang berbeda dibandingkan dengan substrat yang lebih halus (Pierrejean et al., 2020).

Selain itu, penelitian oleh Ernawati et al. (2011) mengidentifikasi bahwa pada kedalaman tertentu di perairan Tegal, fraksi lempung mendominasi, diikuti oleh fraksi liat dan pasir. Variabilitas ini dalam komposisi substrat memengaruhi distribusi lokal spesies bentik dan proses ekologis yang terkait, termasuk efisiensi dalam siklus nutrien dan ketersediaan oksigen di lapisan sedimen bawah laut. Pemahaman tentang dinamika substrat ini penting untuk konservasi dan pengelolaan sumber daya perairan, karena kondisi substrat dasar memengaruhi kehidupan akuatik di tingkat dasar, dan pada akhirnya, kesehatan dan keberlanjutan ekosistem laut secara keseluruhan (Narayan & Pandolfi, 2010).

4.5 Kesimpulan

Penelitian ini menunjukkan bahwa kondisi lingkungan seperti suhu, salinitas, kedalaman, DO, dan pH berpengaruh terhadap kesehatan dan distribusi kerang simping di Teluk Bone dan Selat Makassar. Suhu dan salinitas yang agak lebih tinggi di Selat Makassar memberikan tantangan osmotik dan termal yang lebih besar bagi kerang, sementara di Teluk Bone cenderung memiliki kondisi yang lebih moderat dan stabil. Namun rata-rata nilai parameter itu masih dalam kisaran yang optimal bagi pertumbuhan dan reproduksi kerang simping. Tipe substrat pasir berlumpur di kedua lokasi menyediakan habitat yang mendukung bagi organisme bentik, berperan penting dalam kesehatan ekosistem. Setiap lokasi memiliki dinamika lingkungan bersifat khas, yang memengaruhi keberlanjutan populasi kerang simping, sehingga perlu dipertimbangkan dalam strategi pengelolaan sumber daya perairan.

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