

## Table of Contents

1. Chapter 1: Introduction .....	1
1.1 Introduction .....	1
1.1.1 Bibliometric Analysis of Molluscan research .....	4
1.2 Methodology .....	7
1.2.1 Data retrieval .....	8
1.2.2 Data analysis .....	10
1.3 Results .....	13
1.3.1 Publication Growth Over Time .....	13
1.3.2 Authorship Patterns and Collaboration Networks .....	14
1.3.3 Geographic Distribution of Research .....	16
1.3.4 Interdisciplinary Trends in Molluscan Research .....	16
1.3.5 Most Globally Cited Papers and Influential Authors .....	17
1.3.6 Locally top cited papers .....	20
1.3.7 Most Affiliated Institutions .....	23
1.3.8 Citation - Country Analysis .....	24
1.3.9 Keywords Analysis .....	25
1.3.10 Trend topics .....	27
1.3.11 Journal metrics .....	28
1.4 Discussion .....	30
1.4.1 Molluscan Research across India and Gujarat .....	31
2. Chapter 2: Methodology .....	37
2.1 Study Area .....	37
2.2 Time Span: .....	39
2.3 Habitat Characterization .....	40
2.4 Sampling Method for Molluscan diversity .....	41

2.5	Morphometric Analysis (Length – Weight relationship) of Selected Species.....	41
2.6	Species Distribution and Ecological Status .....	44
2.7	Zonation .....	44
2.7.1	Spray Zone .....	45
2.7.2	Upper Intertidal zone.....	46
2.7.3	Middle Intertidal Zone .....	46
2.7.4	Lower Intertidal Zone .....	47
2.8	The selection of Dominant species .....	48
2.9	Quadrat Sampling.....	49
2.10	Zone wise distribution of species.....	49
2.11	Species Distribution Model.....	50
2.11.1	Background on the importance of species distribution mapping ..	50
2.11.2	Species sampling and identification techniques.....	51
2.11.3	Occurrence data collection methods.....	51
2.11.4	Quadrat studies for key species selection and data collection .....	52
2.11.5	Acquisition and processing of environmental data from Bio-Oracle 53	
2.11.6	Methodologies employed for predictive mapping .....	55
2.11.7	Model training, testing, and evaluation methods .....	56
2.11.8	Validation procedures using ground data. ....	57
2.11.9	Projection of models onto the Gujarat coast. ....	58
2.12	Gonadal Sampling.....	59
2.13	Data Analysis.....	60
2.13.1	Biodiversity indices .....	60
2.14	Population Ecology.....	62
2.15	Statistical Analysis.....	62

3.	Chapter 3: Diversity .....	63
3.1	Introduction .....	63
3.2	Results and Discussion.....	67
3.2.1	Molluscan Diversity:.....	67
3.3	Molluscan Species Composition .....	133
3.4	Diversity Indices .....	134
3.5	Mating Behaviour of different Molluscan Species .....	143
4.	Chapter 4: Distribution .....	147
4.1	Introduction:.....	147
4.1.1	Challenges in Molluscan Conservation and Management.....	149
4.1.2	Overview of Machine Learning Models in SDM .....	150
4.2	Results and Discussion: .....	154
4.2.1	Species Distribution Model.....	157
5.	Chapter 5: Population Ecology .....	171
5.1	Introduction .....	171
5.2	Result and Discussion .....	171
5.2.1	Gonadal Cycle Analysis of Selected dominant Species .....	184
6.	Chapter 6: Conclusion.....	195
6.1	Assessment of Molluscan Diversity: .....	195
6.2	Methodological Approach:.....	195
6.3	Distribution Patterns: .....	195
6.4	Predictive Models: .....	195
6.5	Population Dynamics: .....	196
6.6	Significance of the Study:.....	196
7.	Chapter 7: Summary .....	199
8.	Chapter 8: Bibliography.....	207