

IS # 299V

Population Analysis of Reef Fishes

Course Description:

This course is a hands-on study of the life history and ecology of a recreationally important coral reef fish. The student will describe aspects of growth, reproduction, and mortality through both lab work and field studies and will write a term paper summarizing their findings.

Objectives/SLO'S

- 1) Understand the basic concepts and goals of fisheries science.
- 2) Compare different types of management strategies.
- 3) Become proficient at one or more lab technique(s) commonly used in fisheries science.
- 4) Analyze and interpret data using an appropriate model or statistical test.
- 5) Search for scientific articles using electronic databases.
- 6) Write a report using standard scientific format.

Required Activities/ Method of Instruction

- 1) **Lab and Field Work:** The student will participate in a minimum of 20 hrs lab and/or field work. Activities may include, collecting fish, grinding and polishing otoliths, histology of reproductive tissues, Scanning Electron Microscopy, snorkeling, and video analysis.
- 2) **Meetings with Instructor:** The student will meet with the instructor weekly to discuss progress and concerns. The student should be prepared to give a short description of their current work and findings and outline future research objectives.
- 3) **Draft Report (October 26th):** The student is required to submit a draft report 2/3 way through the semester. This report should include 1) Literature Review for species of interest 2) Research Question/ Objectives 3) Description of methodology 4) Summary of lab or field work completed to date 4) Preliminary analysis of data collected 5) Timeline for future work. The report may be either oral (15 minutes w/PowerPoint) or written (5 pages).
- 4) **Final Report (December 10th):** All lab and field work will culminate in an original written report (10-15 pages, double spaced w/ 12 point font and standard margins) written in standard scientific format (IMRAD). (See Attached Outline).

Textbook/ Resource Materials (Provided by the instructor)

Jennings, S., Kaiser, M.J. and J.D. Reynolds. 2001. Marine Fisheries Ecology. Blackwell Science, Ltd.

Day, R.A. 1994. How to Write & Publish a Scientific Paper. Orynx Press .

Method of Grading:

Lab/ Field Work	20 pts	A:	90-100
Weekly Meetings	10 pts	B:	80-89
Draft Report	20 pts	C:	70-79
Final Report	50 pts	D:	60-69
		F:	< 60

Final Report Outline

I. Introduction (15 points)

- 1) What are the scientific and common names?
- 2) By what method(s) is it fished (if any)?
- 3) What are the commercial, recreational, or cultural uses for the fish?
- 4) Are there any estimates about annual take?
- 5) What life-history information is already known for the species?
- 6) Do any fisheries regulations currently exist for the species?
- 7) What were the objectives/ research question for your study? (i.e., what additional information did you seek to provide? Why is this information important?)
- 8) Clearly state any hypotheses.

II. Materials and Methods (10 points)

- 1) How was the fish population sampled or surveyed? (i.e., were the fish collected or were they surveyed visually?)
- 2) Clearly describe methods used to collect life-history and demographic information.
- 3) What statistical tests or models were used to analyze the data? What alpha value was used to detect significance?

III. Results (10 points)

- 1) Append graphs, pictures, and charts as necessary. All should be clearly labeled (see Day, 1994).
- 2) Summarize results indicated by tables or figures.
- 3) If using statistical tests, clearly indicate which results were significant and which were non-significant. Include P-values when appropriate.

IV. Discussion (10 points)

- 1) Were your hypotheses supported by the data?
- 2) How do the results for the target species compare to others in the same fish family?
- 3) Based on your data, what changes (if any) should be made to current management strategies for the species?
- 4) Describe any sources of error in your study.
- 5) Indicate directions for future research.

V. Literature Cited (5 points)

- 1) List all literature sources used in the paper using the format provided by the instructor.
- 2) Cite each source within the text using "Author (Year)" format.