

MARYMATHA ARTS AND SCIENCE COLLEGE MANANTHAVADY
DEPARTMENT OF ZOOLOGY
ADD ON PROGRAMME IN SNORKEL SURVEY TECHNIQUES (APSST) 2022-23

Programme Code: APSSTMMC22-23

Year: 2022-23

Programme duration: 35 hours (15 hours theory and 20 hours practical)

Entry Requirement: Interested third-year BSc Zoology students

Programme Co-ordinator: Dr Sanu V.F.

Programme Description

Snorkeling is the underwater observation and study of fish in flowing waters. Snorkeling gear is worn by biologists who, individually or in small teams, survey fish abundance, distribution, size, and habitat use while slowly working in (generally) an upstream direction. Snorkel surveys are widely used to monitor fish populations and other flora and fauna in freshwater/marine ecosystems and to estimate both relative and total abundance. The Snorkel Survey Techniques (SST) course is a lecture-based review of standard snorkel survey equipment and methods with the option to add an applied field day where course participants will conduct several applied exercises to learn first-hand how to plan prepare and conduct a safe and efficient snorkel survey. Field training sessions typically take place in a swimming pool where course participants will learn to conduct snorkel surveys for analysing fish and other surface and bottom-dwelling organisms.

Course format

The Snorkel Survey Techniques course is 15 hours of classroom-based review of snorkel surveying equipment and methods. An additional 20 hours can be scheduled to complete a field-based practical session. In the field course, participants will apply the theory and conduct snorkel surveys and implement a snorkel survey plan.

Aim

The course intends to give an insight into basic survey procedures, monitoring of freshwater ecosystems by using different survey methods, data handling analysis and reporting, Survey design skills, and knowledge of relevant standard operating procedures to conduct field research.

Learning Objectives

Upon successful completion, SST course theory participants will be qualified and able to:

- Identify pre-planning steps and considerations
- Identify who, what, when, where and why considerations for snorkel surveys
- Research and construct a study design

- Conduct population estimation techniques
- Collect and manage snorkel survey field data
- Select appropriate snorkel equipment including suits, gloves snorkels, masks, footwear, gloves and accessory support equipment

Upon successful completion of the field session, SST course theory participants will be qualified and able to:

- Apply the theory as well as Implement snorkel survey and river safety protocols

Syllabus

Unit I

Few definitions and precautions, sampling strategy, sampling design, purpose of monitoring. Recommended snorkelling Protocols, Minimum Criteria for water depth, temperature, and visibility. Snorkeling Procedures. (**3 hours**)

Unit II

Field studies- monitoring techniques, Counting the number of individuals, visual census, Establishing a transect line, Establishing landmark, transect sheet, station sheet, underwater photography, Quadrat sampling , Primary Quadrat Analysis, Quadrat size and shape, Determining the number of quadrats to sample (**6 hours**)

Unit III

The choice of snorkelling equipment, wetsuit, The fins and boots, Mask, Snorkel, Essential information on free-diving mechanisms, Breathing, Free-diving, The signs announcing a black-out, Safety principles, Physical condition of divers, The number of divers and their behaviour, Weather conditions, Marking of the intervention area (**3 hours**)

Unit IV

Monitoring equipments, Note taking, The waterproof slate, Waterproof sheets and laminated documents, Ballasted floats, Watch, Thermometer, GPS, Cameras, Permanent signalling buoys, Measuring equipment, Measuring Tapes, Calliper, Scaled gauges, measuring and weighted cord, Compass, Quadrats, hand nets (**3 hours**)

Unit V (Practical)

Personnel Requirements and Training, Safety and training, Water adjustment with survival float and checking swimmer abilities, Get comfortable in snorkeling gear, Learn how to anti-fog goggles, Using the snorkel and clearing it, General snorkeling tips. Underwater photography practice, Survey methods, Use of underwater slates, basic signals for underwater communications, Transect setting, use of quadrats, use of hand nets, sediment collection, Use of thermometers, P^H meter, turbidity measurement (**20 hours**)

Reference:

1. Underwater Methods for Study of Salmonids in the Intermountain West, Russell F. Thurow (1994)
2. Qualitative Freshwater Mussel Survey. Partnership for the Delaware Estuary. PDE FMRP Method No. 05. 6pp. Cheng, K (2017)
3. Protocol for Snorkel Surveys of Fish Densities, Seth White, Casey Justice, Dale McCullough (2012)
4. Quadrat sampling, Caroline Prevot, Lycée POTHIER, Orléans, INRP ACCES, Formaterre (2010)
5. Intertidal Quadrat Study Techniques Manual. Straitkeepers Georgia Strait Alliance (2002).
6. Snorkel surveys of the marine environment: methodological guide. Mathieu Imbert, Parc national des Calanques (2014).