

Practical No.-10-

Fisheries

-The concept of fisheries sciences:

-Science: science is the manner of work and thinking that plans, and arranges programs of field observations, laboratory analysis, experimentation to obtain a kind of knowledge.

-Fishery science: Fishery science as to science is not distinguished as the above mentioned objectives, but is distinguished in term of the systems to which it is devoted.

-Fishery science is concerned with the natural resources.

-Natural resources are tackled along two major lines:

-Resources as an economic phenomenon or as an Ecological term.

-In the first, it means anything including man the organism can do to benefit. In the second the activity of man dropped.

-Unit systems of fishery science:

1-**Unit fishery:** Unit fishery is a natural grouping of boats, men, and gear for the exploitation of a defined resource in some more or less defined area engaged in the exploitation of one or more unit stocks.

2-**Fishing unit:** Fishing unit is that complex of equipment and manpower, which can operate autonomously in fishing industry.

3-**Unit stocks:** Unit stocks is a population of fish either of one or more species occupying a particular area and living independently of other populations where all biological parameters are followed.

-Departments of fishery sciences:

1-**Primary sector:** is that which is directly concerned with taking the material from the resource.

2-**Secondary sector:** is that which is concerned with the transformations of what is taken from the resource. i.e. processing.

3- **tertiary sector:** is the which is concerned with handling, storing, transporting, and selling.

-For investment purposes in fish catching, it is might to know every thing about the fishery which take in account the following points:

1-Fishery biology: The objectives:

1-To give answers to the decision-makers to the question...

What to fish?

Where top fish?

When to fish?

When to do that?

How to fish?

How much to be expected?

2-To give information on the distributions and fluctuations of fish abundance of the exploited fish on a prolonged period.

3-To indicate the level of catch that preserves the continuity.

4-To study the structure and dynamics of the exploited fish in relation to other species.

5-To provide data on Oceanography and Limnology as basis for knowledge of the environment.

6-To follow the behavior of the exploited species (migration).

7-To contribute towards the biology of processing, storage, handling, and spoilage combat.

2-Fishery Technology:

1-This is concerned with the fishing gear (Boats, Nets) construction and modification and the follow-up as the need arises.

2-Has a general responsibility as regard to fishery terminals and the design of landing spots.

3-Also concerned with the study of the methods of processing, storing, and transpiration.

3-Fishery Economy:

-This is concerned with the institutional structure of industry and with the relation of the fishery itself, with the consideration of the country's economy, business, management problems of man power, marketing, supply and demand costs and earning prices and all that determine prices.

Fishing Gear

-Gear includes all equipments employed in the process of fishing with nets and boats being the main component.

1-**Nets:** Nets are basically made up of cotton, nylon, blended material (monofilament).

-Cotton is minimally and now in view of least durability and high cost, Nylon is not preferable in cases where injury is avoided in fresh stocks, Monofilament is widely used because of it comprise the best quality of the past alternative.

-Nets may be colored especially in stocks with sharp vision.

-Some nets are used of material other than mentioned earlier (e.g. wire, bamboo, straw etc.)

-Nets is grouped into fixed and moving nets. The utilization is dependent on the behavior of the fish, the location and exploitation policy.

-There is a wide range of sizes and shapes of nets. Variation is correlated with proper functioning (profitable catch and provision of fish replacement).

-Advantages of mesh sizes to collect a huge number of fish and in the same time permits fish (small) to back to water.

-Nets are placed into two categories:

-Marine and Inland (fresh water) and further subdivisions occur in each in order meet the need of fishing from the varying levels along the vertical water column.

-Classification of Nets:

-Fresh water nets:

1-Cast nets (Taraha): It is rounded diameter is up to 10 m. This is populated from bank and in sandy bottoms. It collects a varying species of small medium sizes. Of the fish collected by "Taraha" are *Hydrocynus*, *Alestes* that are important for "Fassekh" industry.

2-Seine nets: (gill nets)

-These nets are meant to catch fish through the entanglement of the operculum cover once fish try to pass through the upright net blocking its course.

-The length depends upon the need requirement the size of the exploitable resource is taken into account.

-They are grouped into bottom nets and also those used for surface and mid-water.

3-Trammel nets (canar net):

-It is composed of a set of three nets with the middle being of a small mesh and those on either side with bigger mesh.

-Not only that but the middle net is loose and long and its made so in order to entangle the fish that reach them. Once a fish is trapped here, it can hardly find its way out.

-The net is used for collection of big-sized fish and aggressive ones in lakes and artificial reservoirs.

4-Long-lines: This is a specialized method of collecting selected fish through baits and hooks.

-Used in across section starting from the shore.

-This method is widely used specifically for catching large carnivores fish like *lates niloticus* and *Bagrouis bayad*.

5-Baskets: This made up of palm tree products.

-Designed to be placed at the bottom seasonal water.

-It is spherical with an inlet through which fish find their way to the bait inside. These fish fail to escape and are thus caught.

Marine nets:

-Nets used at sea belong to any of:

a-**Demersal nets** (in bottom watering.-longlines, trawls, Danish seines).

b-**Pelagic nets** (in surface and mid-waters e.g. handlines, mid-water trawls, purse seines and drift nets).

-The above mentioned at standard and internationally used.

1-**Longlines:** demersal, used in coastal areas, to collect flat fish on the bottom. It is intended to catch fish in coral reefs areas----> fish are not normally caught by any of the other nets.

2-**Otter trawler:** demersal, collect fish from the bottom deep columns of water. Used by small vessel for collection of flat fish. The lowered boards adjust the level.

-The trickler chain disturbs fish at the bottom, which are tempted to enter the net.

3-**Vigeneron-Dahl trawl:** used for bottom fishing.

-Both boards and chain assist in adjustment and fishing.

-Structurally, the otter and Vigeneron-Dahl trawlers are built on similar plans, the differs between the two is the location of the otter boards which are attached to the wings of the first, and placed at a far distance in the second. In the latter, they secure better chances for collection of fish buried in the bottom.

4-**Danish seine:** demersal but intended to collect fish along the vertical water column with concentration on bottom fish in relatively deep water.

-We have a boat carries the line, head rope is attached to a flag, net is dropped, floats in the surface, give wall-like collect fish.

-The principle on which it is built is similar to traditional fresh water seine, except for the area of operation in the sloping bottom.

-The semi-circular movement of the boat or fisherman trap bottom dweller in the bag-like shape of the net.

-The pelagic nets:

1-**Purse seine:** pelagic for surface and mid-water collection.

-Two boats carry nets and sail, the boats set out messenger rope start to move in a circle, wait till fish enter, and collected, then move in a circle.

-It is a typical gill-net benefiting from catching fish through opercular entanglement added to more fish trapped during the circular operation of the net at the closure of the process.

2-**Drift net:** pelagic, used in open water and modified to extend activity to varying levels of the vertical water column.

-Used for collection of shoals of migrating fish.

-Set in upright position across the course of fish movement, which are collected by the opercular.

Adding more standard pieces horizontally and or vertically may increase -
The production.

Boats

-The success of the fishery is completed by the overall knowledge of the boat structure and facilities.

-Boats are traditionally made of:

1-**Wood:** sunt and neem wood is preferable for durability and least effected by alternate moistry and drying.

2-**Steel:** common in all over the world but in inland fisheries, there is the risk of quick damage by rust.

3-**Fiber-glass:** The best provided those not used in waters with bottom obstacles e.g. corals.

-Boats varies in size from small one to commercial fishing boats.

-The operating mechanisms vary from simple ones to inboard to outboard engines.

-Commercial boats may be furnished with sophisticated equipments such as Echo sounders and sonar's that help in detection of fish abundance and distribution. Beside these equipment that help in storage and preservation may be added too.

معدات الصيد في قطاع غزة (Fishing Gear in Gaza) (أ) المراكب

يوجد في قطاع غزة معدات صيد مختلفة متضمنة المراكب والشباك . ويبلغ عدد المراكب المستخدمة في الصيد في قطاع غزة 818 مركباً يعمل عليها حوالي 2646 صياداً (انظر الجدول) .

موقع الصيد	لنش جر	لنش	حسكة	حسكة مجداف	افلوكا مجداف	عجل	المجموع
غزة	18	33	250	2	88	-	319
دير البلح	1	2	55	12	6	-	76
خان يونس	-	10	56	3	26	-	103
رفح	-	10	56	3	33	8	123
بين الموانئ	-	-	-	111	-	21	111
ايرز	-	-	14	-	-	-	14
المجموع	19	55	431	131	153	29	818

وتعتبر لنشات الجر أكبر المراكب العاملة في مجال الصيد وهي مصنوعة من الخشب و متوسط طولها 15 متراً ، يليها لنشات الشانشولا بطول 13 متراً ، أما بالنسبة للحسكات فهي تصنع محلياً من الفيبر جلاس بطول 5-7 متراً وتهى عملاً لحوالي 1200 صياداً في قطاع غزة ، وتعتبر المراكب الأكثر نشاطاً نتيجة لتعدد أغراض استعمالها ، أما مراكب الافلوكا وحسكات المجداف والعجلات فهي تعمل بدون مولدات وتمثل الفئة المتبقية من اسطول الصيد . ويضاف الى ماسبق وحسب آخر مسح ميداني (1997) أن حوالي 50 جهازاً ايكو ساوندر تستعمل في اسطول الصيد في قطاع غزة (مشروع كبير / معاً 1997)

(ب) شباك الصيد

إن جميع شباك الصيد تصنع في قطاع غزة من مواد خام تستورد من الخارج وكثيراً ما تصدر شباك الجر الكاملة بعد تصنيعها الى اسرائيل حيث تبلغ تكلفتها من 1000 - 1300 دولاراً أمريكياً .

وتتنوع شباك الصيد في قطاع غزة من حيث مقاس خيوطها وفتحاتها ونوع جبالها لتتناسب مع نوع وكميات الأسماك المراد صيدها وتوجد الأنواع التالية من شباك الصيد :-

أ. **شباك الجر** : وهي ذات فتحات عيون من 30 - 80 ملم وتصنع بأكملها في قطاع غزة وتصدر الى اسرائيل .

ب . **شباك الشانشولا** : وتختلف فتحاتها من 45 - 72 ملم ولونها أخضر وتستخدم لصيد أسماك السردين والوطواط .

ج . الشباك الثابتة ومنها :

* الشباك المبطنه وتكون عيونها بمقاس 44 ملم للشباك الداخليه و 24 ملم للشباك الخارجيه .

* الشباك الخيشومية السطحية ذات فتحات بمقاسات مختلفه حسب نوعية السمك المصطاد ، وتستخدم لصيد أسماك التونة ، والعصفور والسردين ، وأخرى .

* الشباك الخيشومية القاعية وتستخدم لصيد أسماك الدنيس وبعض الأسماك الكبيرة الأخرى

* شباك الطرح وذات فتحات عيون أقل من 20ملم وتأثيرها بسيط جداً على المصائد .

* شبكة التحويلة الشاطئية وهي نادرة وأثناء مسح 1997 وجدت فقط واحدة منها .

* الصنار وهي للأفراد والهوايات وتأثيرها لا يذكر على الصيد السمكي . (مشروع كبير / معاً ، 1997) .