BALIK ve BALIKÇILIK

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Eylül 1956

ET ve BALIK KURUMU UMUM MÜDÜRLÜĞÜ
TARAFINDAN NEŞREDİLİR.

ET ve BALIK KURUMU

Ekrem C. Barlas — **Umum Müdür**

Bu sayıdaki yazı işlerini fiilen idare eden: **Rıdvan Tezel**

Kapak resmimiz, sardalya avına çıkmak üzere hazırlık yapan bir kancabaşı tespit etmektedir.

The cover picture shows a Gır-Gır boat sailing for sardine catch.

Foto: Rıdvan Tezel

Abone şartları:

Yıllık abone bedeli 6 Türk Lirasıdır. Et ve Balık Kurumu İstanbul İrtibat Bürosu, Yeni Valde Han Kat 5 adresine posta havalesiyle gönderilmelidir.

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BALIK ve BALIKÇILIK

(FISH AND FISHERY)

ET ve BALIK KURUMU TARAFINDAN HER AY NEŞREDİLİR

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G. F. C. M. — I. C. S. E. M

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ÖZEL SAYI

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		Rıdvan Tezel, Editor

I.C.S.E.M. ve G.F.C.M'in Sayın Delegelerine

Türkiye Cumhuriyeti Hükûmetinin daveti üzerine Eylûl 1956 ayında İstanbul'da toplanacak olan Akdeniz İlmî Araştırmalar Beynelmilel Komisyonu ile Akdeniz Balıkçılık Genel Konseyinin çalışmalarına katılmak üzere gelmiş olan delegasyonlara ve müşahit hey'etlere hoş geldiniz der, İstanbul'daki çalışmalarının semereli ve ikametlerinin kendilerini memnun edecek şekilde geçmesini temenni ederiz.

Türk Hükûmeti, balıkçılığın gerek ticarî gerekse ilmî tarafları ile uğraşan yegâne müessese olması dolayısiyle Akdeniz İlmî Araştırmalar Beynelmilel Komisyonu ve Akdeniz Balıkçılık Genel Konseyi ile ilgili toplantıların organizasyonunu Et ve Balık Kurumuna tevdi etmiş bulunmaktadır.

Bu Kongre münasebetiyle Türkiyede balıkçılık ile alâkalı muhtelif etüdler ve istatistikler, ayrı raporlar, broşürler ve mecmualar hatında bir iki yabancı dil ile de neşredilmiş ve herkesin istifadesine arzolunmuştur. Aynı zamanda teşkilâtımız bütün müessese ve laboratuarlarını ve Türkiyede mevcut teşkilât ve müesseseleri her arzu edenin ziyaretine hazır ve açık bulundurduğunu bildirmekten ve bu ziyaretlere tavassut etmekten hususî bir memnuniyet duyduğunu ifade etmek ister. Bu sebeple burada Türkiye'nin imkânları ve teşkilâtı hakkında geniş izahlara girmeyi lüzumsuz addediyoruz. Ancak bir iki cümle ile balıkçılığın Türkiyede hangi prensip ve esaslar dahilinde ele alındığını belirtmekle iktifa edeceğiz.

1 — Türkiye deniz ve tatlı sularında muhtelif mevsimlerde hangi cins balıkların ne miktarda avlanabileceklerini ilmî esaslar dahilinde tesbit etmek;

2 — Avlama vasıtalarını keyfiyet ve kemiyet bakımından balıkçılığa elverişli evsaf ve miktara çıkarmak;

3 — Karada ticarî ve ekonomik esaslara uygun yani iç ve dış pazarlara göre temerküz noktaları vücuda getirmek, bu alarda soğuk depolar, dondurma depoları, buz fabrikaları tesis etmek; vagon, kamyon, gemi ve konserve fabrikaları, balık yağı ve unu fabrikaları ile istihsalin kıymetlendirilmesini sağlamak;

4 — Bu işlerde çalışacak teknik personeli temin etmek ve yetiştirmek;

5 — Pazar şartlarını, satış şekillerini ıslâh etmek ve halk sağlığı bakımından evsaf kontrolünü devamlı bir şekilde sağlamak ve herkesi emniyetle balık satın almağa teşvik etmek;

6 — İhracat ve dahilî piyasalar bakımından bu nizamın aksamadan işlemesini sağlamak için müstahsil ve tüccara malzeme ve nakit olarak müsait kredi imkânları sağlamak ve balıkçıların mesleklerini daima inkişaf ettirecek fiyat ve pazar şartlarını temin etmek;

7 — Balıkçılıkla uğraşan şahısların hayatlarını ve vasıtalarını sigortalamak imkânlarını temin etmek;

Kurumumuzun başlıca iştigal mevzuları arasındadır.

Kurumumuz Kongre için sarfetmiş olduğu mesainin uzaktan ve yakından gelmiş olan heyetleri memnun bırakmış ve kendilerinde her fırsatta Türkiyeye ve müesseselerimize tekrar gelmek arzularını uyandırmış bulunmasını ümit etmek ister.

EKREM C. BARLAS
Et ve Balık Kurumu
Umum Müdürü

To the Delegates of the I.C.S.E.M. and the G.F.C.M.

The Meat and Fish Office welcomes heartily all delegates and observers who have made the journey to Istanbul to take part in the meetings of the International Commission for the Scientific Exploration of the Mediterranean Sea and the General Fisheries Council for the Mediterranean and hopes that the discussions shall bear beneficial results for all the parties concerned, and that the delegates may enjoy their stay in Istanbul.

The Turkish Government has entrusted the Meat and Fish Office, as the only Turkish Agency, dealing with both the commercial and scientific angles of fisheries, to do all the preparatory work for the organization of the meetings.

On the occasion of these meetings different studies, statistics, and reports related with turkish fisheries have been published in several languages and put to the disposal of those interested. We are happy to announce that our entire organization with its different installations, plants and laboratories as well as similar institutions in Turkey are open to the visit of our guests. We shall be only too glad to arrange such visits.

We would like, however, to enumerate in a few phrases, the principles under which the problem of fisheries in Turkey has been taken into hand by this Office:

1 — To ascertain with scientific methods the seasons, the kinds and quantities of fish that can best be caught in turkish seas and lakes,

2 — To increase and improve existing fishing gear,

3 — To build up fish-collection centers best suitable for inland and foreign markets, to erect cold-storage and freezing plants, ice-factories, to supply adequate means of transportation such as trucks, railroad cars and refrigerated vessels to transport the production and to erect fish meal and oil plants to process excess landings of fish,

4 — To train the personnel for these operations,

5 — To improve marketing methods in conformity with market conditions and to excercise a constant sanitary control.

6 — In order to ensure a regular flow of fish for interior consumption and exports, to grant long-term credits and equipment to fishermen and fish merchants and to find the best and most profitable outlets.

7 — To give the fishermen the means of insuring their lives and their equipment,

These are, in short, the main points in fisheries, on which the Meat and Fish Office has concentrated its efforts.

We shall feel happy if the delegates part from Turkey with the feeling that this Office has succeeded in its task and carry in their hearts the wish to visit Turkey and our installations again.

EKREM C. BARLAS
Director-General
Meat and Fish Office

La Commission Internationale Pour L'Exploration Scientifique De La Mer Méditerranée

Son Histoire - Sa Raison D'Être

Prof. G. PETIT
Directeur du Laboratoire Arago et de la Station Zoologique de Villefranche
Secrétaire Général de la Commission

C'est à Monaco, en 1910, à l'occasion de l'inauguration du Musée Océanographique que le Prince Albert Ier de Monaco venait d'élever comme un monument dédié à l'Océanographie, que devait se concrétiser l'idée de coordonner, selon un plan précis, certaines recherches d'intérêt général accomplies par diverses Stations méditerranéennes. Déjà, du reste, en 1908, à l'occasion d'un Congrès de Géographie tenu à Genève, avaient été jetées les bases d'une Commission de la Méditerranée.

Mais c'est à Rome, en Février 1913, qu'eut lieu la première conférence au cours de laquelle fut ébauchée la structure de cet organisme et définie sa raison d'être. La réunion de fondation devait se tenir à Madrid en 1914. La guerre ne l'a point permis.

Cependant, l'idée avait fait son chemin. Elle suscitait parmi les océanographes et les biologistes s'intéressant à la Méditerranée, un grand enthousiasme, une volonté commune d'aboutir. C'est ainsi qu'en 1915, les océanographes espagnols, français, italiens, réunis à Messine, pour l'inauguration de ce qui s'appelait alors l'Institut Central de Biologie Marine, décidaient de constituer une Commission de la Méditerranée Occidentale. Son centre devait être Malaga. ODON DE BUEN relatait, non sans émotion, la séance où fut prise une telle décision, séance solennelle "une nuit d'hiver dans une salle faiblement éclairée afin que la lumière ne put servir de cible aux avions ennemis".

Il fallut cependant attendre la fin du premier bouleversement mondial. En Juin 1919, la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée, est définitivement créée à Rome; son Bureau Central provisoire se réunit le 15 Octobre 1919, à l'Institut Océanographique de Paris. La première Assemblée plénière se tenait avec un grand apparat, à Madrid, le 17 Novembre 1919.

Cette première Assemblée était présidée par le Roi d'Espagne, ayant à ses côtés S.A.S. le Prince Albert Ier de Monaco. Les délégués présents appartenaient à l'Espagne, la France, l'Italie, la Grèce, la Principauté de Monaco, l'Egypte, la Tunisie et la Turquie. La Délégation du Gouvernement Serbe n'avait pu arriver à temps. Le Gouvernement britannique non représenté à la Commission, demandait à être tenu au courant de tous les accords qui pourraient intervenir .

L'organisation de la Commission, telle qu'elle avait été établie à ses débuts, n'a été modifiée que dans les détails. D'une manière générale, on a eu tendance à alléger son appareil administratif. Le lourd cortège de ses subdivisions, qui n'avaient point été instituées à l'origine, mais plus tard (1924), a été revisé à Monaco en 1954, comme nous le mentionnerons tout à l'heure.

Dès le début, on prévoyait une publication, non périodique, dont se chargeait le Bureau central, destinée à contenir "les résumés, procés-verbaux, communications diverses". C'est le Bulletin de la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée, dont le Ier numéro date du 15 Janvier 1920 et le dernier (No. 10) du 20 Décembre 1924.

La Commission fixait un programme de travail qu'elle communiquait aux différentes Nations pouvant organiser des croisières. Il s'agissait de recherches internationales indépendamment desquelles chaque Etat participant était libre d'exécuter des travaux dans ses eaux et était prié d'en informer le Bureau.

En outre, la Commission recommandait aux Gouvernements riverains de la Méditerranée, "de créer des Stations biologiques dans les régions où elles font défaut et d'augmenter les moyens d'action scientifique de celles qui existent déjà".

Enfin, la Commission s'adressait aux Stations en vue de recherches à entreprendre. Ainsi s'exprime le Procés-verbal de la réunion du Bureau d'Octobre 1919: Etablir une carte bathymétrique de la région au 1/50.000eme établir la carte lithologique, étudier les conditions hydrologiques, entreprendre des recherches sur la biologie et la distribution géographique "principalement d'animaux utiles", faire au cours des croisières des observations systématiques sur le rendement des filets et autres engins de pêche.

Et tout cela prenait corps. En 1920 et 1921, ce sont les croisières des bâteaux italiens "Tremiti et Marsigli", dans les "Détroits de Constantinople", cependant que le Gouvernement espagnol armait la "Giralda" pour l'étude du Détroit de Gibraltar.

Le Gouvernement français chargeait l'Office Scientifique et Technique des Pêches Maritimes de réaliser les accords de Madrid et, en 1920,

"la Perche" procède à l'étude des golfes de Tunis, de Gabès et détablit de nombreuses stations entre Bizerte et Marseille.

En 1921, le bâteau du Laboratoire Arago, "l'Orvet", sillonne la Méditerranée occidentale pour accomplir le programme prévu par la Commission.

La même année, la Grèce armait le vaisseau "Alphéios", de la Marine de Guerre, en vue d'observations océanographiques.

En 1922, c'est encore le navire italien "Marsigli" qui entreprend une étude systématique du Détroit de Messine, cependant qu'en 1923, une vaste croisière est effectuée par l'Espagne, avec "l'Almirante LOBO", pour l'étude du Thon rouge, en particulier entre Malaga et les îles d'Alboran.

Cependant en 1926, les Rapports et Procès-Verbaux remplaçaient le Bulletin de la Commission. Et cette publication est devenue familière à tous ceux qui s'intéressent aux différents aspects des recherches qui s'accomplissent en Méditerranée.

Nous ne pouvons insister ici sur les nombreux travaux qui ont vu le jour dans les Rapports et Procès-Verbaux, sur les enquêtes approfondies qui y ont été publiées: Le Thon rouge et sa pêche; le plancton; les eaux saumâtres; les Clupéidés; divers problèmes de chimie et de physique, et aussi, un aperçu très documenté, sur les faunes insulaires méditerranéennes... L'avant dernier volume des Rapports et Procés-Verbaux (Vol. XI) porte la date de Septembre 1938. Le volume XII porte celle d'Octobre 1954. Long silence de 16 années. Long silence, certes, regrettable. La guerre qui avait reculé la constitution définitive de la Commission, est encore venue interrompre ses travaux et, cette fois, par ses conséquences si profondes, a rendu le rétablissement plus long, sinon plus difficile. Il n'en est pas moins vrai, que la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée a survécu aux deux grands bouleversements mondiaux. Après la transition que représentait la XIV ème Assemblée plénière de Monaco (1954), l'élan est repris et les résultats déjà obtenus ne feront que s'amplifier.

Le Gouvernement Turc ayant bien voulu adhérer à nouveau à la Commission, c'est à Istanbul, dans les locaux de la Faculté des Sciences, qu'elle s'apprête à tenir sa XVème Assemblée plénière du 12 au 15 Septembre 1956.

La Commission se présente avec ses Groupes de travail comprenant, chacun, des spécialistes des différents Pays adhérant à la Commission. Physique de la Mer.- Chimie de la Mer, dont le Vice-Président-Rapporteur est le Professeur PICOTTI, Directeur de l'Institut Expérimental Thalassographique de Trieste.- Plancton, Groupe de travail particulièrement actif à la tête duquel se trouve l'éminent spécialiste qu'est M. TREGOU-

BOFF, Sous-Directeur de la Station Zoologique de Villefranche.- Necton (Vice-Président-Rapporteur, Dr. DIEUZEIDE, Directeur de la Station d'Aquiculture et de Pêche de Castilione (Algérie).- Benthos (Vice-Président-Rapporteur M.J.M. PERES, Professeur à la Faculté des Sciences de Marseille, Directeur de la Station Marine d'Endoume).- Groupe de travail: Microbiologie (Vice-Président-Rapporteur M. J. SENEZ, Dr. en Médicine et Dr. es-Science).- Sous-Commission des Etangs salés et lagunes.— Sous-Commission de coordination des Laboratoires maritimes qui comprend les Directeurs des Stations des Laboratoires maritimes des Pays adhérant à la Commission de la Méditerranée et dont le Président est le Secrétaire Général de la Commission.

N'oublions pas, enfin, un autre groupe de travail, celui de la Géologie et de la Morphologie sous-marine à l'intérieur duquel s'exerce l'activité du Professeur BOURCART (Paris) et du Professeur SEGRE (Rome).

A İstanbul la Commission Internationale pour l'Exploration de la Méditerranée apporte les réalisations que demandait l'Assamblée plénière de 1954: Le Volume XIII des Rapports et Procés-Verbaux; les Fiches des Laboratoires Maritimes; des fiches de la Faune et de la Flore de la Méditerranée, nouvelle séric, dont le Secrétaire Général désire soumettre la présentation à ses collègues. Elle apporte les trois numéros du Bulletin de Liaison des Laboratoires, publiés depuis Janvier 1955.

A İstanbul la Commission pour l'Exploration Scientifique de la Méditerranée apporte une exceptionnelle contribution scientifique qui se répartit en 75 titres de Communications et de Rapports sur tous les sujets qu'embrasse l'activité de notre Commission. Un Grand nombre de résumés de Communications, 4 Rapports déjà imprimés in extenso, ont été diffusés.

Ainsi, les Directeurs des Laboratoires maritimes de la plupart des Pays adhérant à la Commission, notamment ceux de France et d'Italie, et aussi de Turquie, ce Pays que nous avons le plaisir d'accueillir au sein de notre Commission... nous ont fait confiance. Les spécialistes qui participent aux croisières de la Calypso et aux plongées du Bathyscaphe, sont avec nous.

Tout le labeur scientifique qui s'accomplit en Méditerranée aboutit directement ou indirectement à la Commission, lui permettant de retrouver ses aspirations et sa raison d'être. Enfin, à l'heure ou j'écris ces quelques lignes, il nous est permis d'espérer que la XVème Assemblée plénière d'İstanbul aura le privilège d'accueillir les Délégués et les observateurs de l'Union Soviétique et de la R.P.Roumaine. Tout cela constitue pour ceux qui s'intéressent à l'avenir de la Commission- et ils sont nombreux - un très grand réconfort, une nouvelle et robuste certitude.

Akdeniz Balıkçılık Genel Konseyinin Tarihçesi

(G. F. C. M.)

Birleşmiş Milletler Gıda ve Tarım Organizasyonunun (FAO) vazifelerinden bir tanesi de dünyadaki gıdaî istihsalin arttırılması hususunda bütün sahalarda beynelmilel teşriki mesaiyi teşvik etmesidir. Tabiidir ki, dünya balıkçılığı protein bakımından zengin bir gıda membaıdır ve FAO'nun, Balıkçılık Şubesi vasıtasiyle takip ettiği siyaset de, millî ve beynelmilel seviyelerde balığın muhafazası ve istihsalâtın inkişafı ile arttırılması hususunun teşvik edilmesi ve ilerletilmesidir.

Bu siyasetin takibinde FAO'nun vazifelerinden bir tanesi de, muayyen mıntakalardaki memleketlerin balıkçılık şartlarını tekâmül ettirebilmesi için teşriki mesai edebilmelerini sağlamak maksadı ile mahallî beynelmilel organizasyonlar kurulmasını teşvik ve desteklemektir. Bu sebepten 24 Eylûl 1949 tarihinde kaleme alınan ve 5 hükümetin kabul etmesi üzerine 20 Şubat 1952 tarihinde yürürlüğe giren bir kararname ile teessüs ettirilen Akdeniz Balıkçılık Genel Konseyinin kurulmasını FAO gayet yakından desteklemiştir. Kuruluş tarihinden bu yana Akdenizi çerçeveliyen memleketlerden diğerleri de Konseye girmişler ve bugün azalar aşağıda gösterilen hükümetlerden teşekkül etmiştir:

Fransa	Monako
İngiltere	Tunus
İsrail	Türkiye
İspanya	Yugoslavya
İtalya	Yunanistan
Mısır	

İngiltere kurucu azalardan birisidir. Akdeniz memleketi olmamasına rağmen bazı Akdeniz topraklarından mesuldür. Anlaşma mucibince, FAO'ya aza devletler GFCM'ye de aza olabilirler ve hattâ bazı şartlar tahtında FAO'ya aza olmıyan devletler dahi Konsey'e girebilirler.

GFCM'nin vazifeleri:

Konsey kurulduğundan beri 3 heyet içtimaı tertip etmiştir. Bunun

sonuncusu 1954 tarihinde Monte Karlo'da tertip edilmiş ve balıkçılık mütehassısları tarafından 54 adet teknik rapor takdim edilmiştir.

Konsey'in 4 üncü toplantısı olacak olan halihazırdaki bu Kongre, Türkiye Hükümetinin daveti üzerine 17-22 eylûl tarihleri arasında İstanbul'da yapılacaktır.

Her sene veya en az iki senede bir olmak üzere tertiplenen heyet içtimaları arasında, Konsey bir Reis ve iki Reis Muavininden müteşekkil bir İcra Komitesi tarafından idare edilir. Bu Komite Heyet İçtimalarında verilen kararlar dairesinde Konseyin işlerini idare eder. Konsey'in sekreterliği FAO memurlarından temin edilir. *

Konsey vazifelerini 5 teknik komite ile organize eder.

Bu Komitenin vazifeleri şunlardır:

1. Araştırma
2. İstihsal
3. Kıymetlendirme
4. İç sular
5. Ekonomi ve İstatistik

Toplantıda yapılan tartışmalar ve verilen teknik raporlar - Teknik Komitenin raporlarını da ihtiva etmek suretiyle - Konsey tarafından muntazaman neşredilir. Şimdiye kadar 3 cilt neşredilmiştir.

Akdeniz Balıkçılık Genel Konseyinin gaye ve vazifelerini tam olarak izah edebilmek için en münasip yol şüphesiz ki anlaşmaların 3 üncü maddesini iktibas etmektir:

a) Su ürünü menbalarının geliştirilip faydalı şekilde kullanılmalarını sağlamak konusunda teknik ve oşinografik problemleri formüle etmek,

b) Balıkçılık ve alâkalı diğer sanaiye ait mükemmelleştirilmiş yeni usüllerin tatbikatını teşvik ve araştırmaları koordine etmek,

c) Su ürünleri membalarına ait teknik ve oşinografik bilgileri toplamak, neşretmek ve başka vasıtalarla yaymak,

d) Üye memleketlere millî ve beynelmilel araştırma ve geliştirme projelerinde tavsiyelerde bulunarak, edinilen bilginin bir bütün teşkil etmesini sağlamak,

e) Bu gaye için, muvafık görülen araştırmaları müştereken yapmayı taahhüt ve kabul eylemek,

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* Konseyin faaliyeti ve neşriyatı ile alâkadar olan her organizasyon veya şahıs aşağıdaki adrese yazmakla malûmat elde edebilir: The Secretary of the GFCM, Terme di Caracalla, Rome.

f) İlmî araç, teknik ve terimleri standart hale getirmek için tavsiyelerde bulunmak ve gayretler sarfetmek,

g) Üye memleketlere mümkün olan azamî işbirliği esaslarına riayetlerini tavsiye etmek gayesiyle muhtelif memleketlerdeki balıkçılık kanun ve talimatnameleri hakkında mukayeseli etüdler yapmak,

h) Balıkçıları meslek hastalıklarından muhafaza için hijyen yollarını ve araştırmaları teşvik etmek,

i) Elzem olan materyel ve aletlerin üye hükümetlerce temini için bürolarını hizmete hazır bulundurmak,

j) Üye memleketlere FAO ve icap ettiği takdirde millî veya beynelmilel hattâ alâkalı hususî organizasyonlara ait oşinografik ve ve teknik her türlü meseleleri rapor etmek,

k) Üye memleketlere, FAO konferansına senelik faaliyet raporları vermek ve icabına göre Konsey'in salâhiyeti içine giren konularda FAO'ya bilgi vermek.

Konseyin ne kadar değişik konularla iştigal ettiğini anlamak için 14-19 ekim tarihlerinde Monako'da yapılan üçüncü oturumda kabul edilen programa bir göz atmak kâfi gelecektir. Her Komitenin ayrı bir iş programı vardır. Bunlardan Explorasyon Komitesi Clupeidae, Tuna ve yenebilen Krustasea'larla trawl sahaları ile meşgul olacaktır. Bu işler arasında Clupeidae'lerin yumurtalarının dağılışı ve haritaların gösterilmesi yaş ve büyümelerinin tetkiki, avlanan miktarlar hakkında sahih bilgi edinmek için istatistikler tutulması; muhtelif Tuna cinslerinin Batimetrik ve coğrafik dağılışları, gıdaları, cinsî olgunlukları, muhaceretleri, gelişme sahaları ve nihayet trawl sahalarının harita üzerinde gösterilmesi ve trawl ile avlanan demersal balıkların kaydı gibi işler vardır.

İstihsal Komitesinin programı içinde balıkçı kayık ve av vasıtalarının tasnifi ve av usülleri, balıkçılığı kayıtlandıran kanun ve talimatnameler, balıkçıların kurslar vasıtasiyle yetiştirilmesi, av vasıta ve bölgeleri hakkında bilgi toplamak ve nihayet balıkçıların sosyal emniyeti ve çalışma şartlarının etüdü gibi noktalar mevcuttur.

Kıymetlendirme Komitesinin programında balıkların nakli ve dondurma suretiyle muhafazası, balık unu imali, yağ ve tâli maddeler istihsali, kutu konservesi imalâtı ve İç Sular Komitesinin programında ise suların kirlenmesi, vallikültür, sazan balığı kültürü çalışmaları vardır. Nihayet, GFCM tarafından en son teşkil edilen komite olan Ekonomi ve İstatistik Komitesine de Akdeniz Balıkçılığının genel ekonomik şartlarının etüdü,

istatistik toplanması ve Akdenizdeki deniz hayvanlarının isimlerini ihtiva eden bir kataloğun yapılması problemlerini ihtiva eden bir program verilmiştir.

Görüldüğü veçhile, bu gayet iddialı bir programdır ve Konseyin mahdut personel ve imkânları tahtında behemehal ve katiyetle tatbik edilemez. Bu araştırmalar, Akdeniz balıkçılığı hakkındaki malûmatın arttırılması esnasında yapılması icap eden araştırma tarzını gösterir.

Bu, GFCM'e aza bütün milletlerin devamlı ve mütemadiyen arttırılması icap eden teşriki mesaisine ihtiyaç gösteren bir çalışmadır ve İstanbul'daki toplantı, bir dereceye kadar, son iki sene zarfında kaydedilen terakkiyi aksettireceği gibi Konsey ve Teknik Komiteler tarafından en yakın istikbalde takip edilecek çalışma siyasetinin ana hatlarını da tespit edecektir.

The Story Of The General Fisheries Council For The Mediterranean

(G. F. C. M.)

One of the functions of the Food and Agriculture Organization of the United Nations is to encourage international cooperation in all the fields concerned with the increased production of food in the world. World fisheries are, of course, an important source of protein rich food and the policy of FAO, working through its Fisheries Division, is to encourage and promote, on national and international levels, methods concerned with the conservation, development and increased production of fish.

One of the means taken by FAO in pursuance of this policy is to support and encourage the establishment of regional international organizations which enable countries in a specific region to cooperate in improving the conditions of their fisheries. For this reason FAO gave full support to setting up the General Fisheries Council for the Mediterranean, which was established by an Agreement drawn up at Rome, (now the Headquarters of FAO) on 24 September 1949 and came into force on 20 February 1952, when it was ratified by five governments. Since then, other countries bordering the Mediterranean have joined the Council and

the membership today is composed of the governments of the following countries:

Egypt	Spain
France	Tunisia
Greece	Turkey
Israel	United Kingdom
Italy	Yugoslavia
Monaco	

The United Kingdom is a founder member because, although not a Mediterranean country, it is responsible for certain Mediterranean territories. Under the Agreement, member states of FAO may become members of GFCM and even States which are not members of FAO may also join the Council on certain conditions.

Functions of the GFCM

Since it was established, the Council has held three Plenary Sessions, the last taking place in Monte Carlo in 1954 when 54 technical papers were submitted by fisheries experts.

The present meeting, the fourth in the existence of the Council, is being held at Istanbul from 17 to 22 September by invitation of the Turkish Government.

In between these Plenary Sessions, which are scheduled to take place every year or, at latest, every other year, the Council is run by an Executive Committee, which consists of a Chairman and two Vice-Chairmen. This Committee conducts the business of the Council in accordance with the decisions reached at the Plenary Sessions. The Secretariat of the Council is supplied from FAO staff. *

The Council has organized its work through five technical committees. These committees deal with:

(1) Exploration
(2) Production
(3) Utilization
(4) Inland waters
(5) Economics and Statistics.

The discussions which take place at the Plenary Sessions and the technical papers presented at the meetings - which include the Reports of the five technical committees - are published regularly by the Council. Three volumes have so far been issued.

* Any organization or person interested in the work and publications of the Council may obtain information by writing to: The Secretary of the GFCM, FAO, Terme di Caracalla, Rome.

Perhaps the best way to describe the functions of the GFCM is to quote Article 3 of the Agreement which defined the Council's functions as follows:

a) To formulate all oceanographical and technical aspects of the problems of development and proper utilization of aquatic resources;

b) To encourage and co-ordinate research and the application of improved methods employed in fishery and allied industries with a view to the utilization of aquatic resources;

c) To assemble, publish, or otherwise disseminate all oceanographical and technical information relating to aquatic resources;

d) To recommend to Member Governments such national and international research and development projects as may appear necessary or desirable to fill gaps in such knowledge.

e) To undertake, where appropriate, co-operative research and development projects directed to this end;

f) To propose, and where necessary to adopt, measures to bring about the standardization of scientific equipment, techniques, and nomenclature;

g) To make comparative studies of the fishery legislation of different countries with a view to making recommendations to its Member Governments respecting the greatest possible co-ordination;

h) To encourage research into the hygiene and prevention of occupational diseases of fishermen;

i) To extend its good offices in assisting Member Governments to secure essential materials and equipments;

j) To report upon such questions relating to all oceanographical and technical problems as may be recommended to it by Member Governments or by the Food and Agriculture Organization of the United Nations and, if it thinks proper to do so, by other international, national, or private organizations with related interests;

k) To report annually upon its activities to Member Governments and to the Conference of the Food and Agriculture Organization of the United Nations; and to make such other reports to the Food and Agriculture Organization of the United Nations on

matters falling within the competence of the Council as may seem to it necessary and desirable.

Some idea of the diversity of the work done under the auspices of the Council can be obtained by glancing through the programme which was adopted at the third session of the Council, held in Monaco, 14-19 October 1954. Each committee was given a programme of work. The Exploration Committee was called upon to deal with the clupeidae, tunas, edible crustaceans and trawling grounds. This work included such items as mapping the quantitative distribution of eggs of clupeidae and studying their age and growth; improving fisheries statistics to obtain precise data on the quantities landed, etc.; the bathymetric and geographic distribution of various species of tuna; food, sexual maturity, migrations, breeding grounds and mapping the trawling grounds for each country and recording the demersal fish caught by trawl.

The Production Committee was given a programme which included classifying boats, gear and fishing methods; studying regulations; vocational training of fishermen; gathering data on fishing regions and fishing seasons, and the social and security working conditions of fishermen.

The Programme for the Utilization Committee included the study of transport and preservation of fish by freezing and the study of fish meal, oil and by-products, and canning, while the Inland Waters Committee was called upon to produce studies on pollution, valliculture, carp culture, barrage lakes and salmon culture. Finally, the Economics and Statistics Committee, which is the latest committee to be set up by the GFCM, was given a programme concerned with the general economic conditions of the fisheries of the Mediterranean, statistics, and a catalogue of names of marine animals in the Mediterranean.

This, as can be seen, represents a most ambitious programme and clearly it cannot be carried into full effect immediately with the limited staff and means available to the Council. It does represent the type of work which must be done in the course of improving the knowledge of the Mediterranean fisheries. It is work which calls for continuous and expanding cooperation among all member nations of the GFCM and the present meeting at Istanbul will to some extent reflect the progress made during the past two years as well as chart the course to be followed by the Council and its Technical Committees in the immediate future.

ment ceux qui ne sont pas membres de la FAO peuvent faire partie du C.G.P.M., sous certaines conditions.

Fonctions du C. G. P. M.

Depuis sa création, le Conseil a tenu 3 réunions; la dernière a eu lieu à Montecarlo, (Principauté de Monaco) en 1954, où 54 documents techniques ont été présentés par des experts en matière de pêche.

La présente réunion qui est la 4ème réunion du C.G.P.M., se tient à Istanbul du 17 au 22 septembre 1956, grâce au bienveillant accueil du gouvernement turc. Entre les différentes sessions plénières qui ont lieu, soit tous les ans, soit tous les deux ans, un Comité exécutif composé du Président et de 2 vice-Présidents assure l'administration courante. Ce Comité traite les différentes questions à la lumière des décisions qui ont été prises lors des sessions plénières. La FAO assure le secrétariat du Conseil. (*)

Le Conseil pour faire face à ses activités, dispose de 5 comités techniques; ce sont les comités de:

1) l'Exploration
2) la Production
3) l'Utilisation
4) Eaux Intérieures
5) l'Economie et de la Statistique

Les discussions qui ont eu lieu lors des séances plénières et les documents techniques qui sont présentés lors des réunions, ainsi que les rapports des 5 comités techniques, sont publiés régulièrement par le Conseil. Jusqu'à ce jour, 3 volumes ont été publiés.

La meilleure manière, probablement, de décrire les fonctions du C. G. P. M. consiste à citer purement et simplement l'article III de l'Accord qui établit ses fonctions de la manière suivante:

a) Exposer tous les problèmes océanographiques, et les aspects techniques du développement et de l'utilisation appropriée des ressources aquatiques;

b) Encourager et coordonner les recherches et l'application des méthodes perfectionnées employées dans le domaine de la pêche

(*) Toute organisation ou personne s'intéressant aux travaux et aux publications du Conseil peut obtenir des informations à ce sujet en s'adressant au Secrétaire du C.G.P.M., FAO, Via delle Terme di Caracalla, Rome.

et des industries connexes en vue de l'utilisation des ressources aquatiques;

c) Rassembler, publier ou diffuser de toute autre façon, toutes les informations océanographiques et techniques se rapportant aux ressources aquatiques;

d) Recommander aux gouvernements d'Etats Membres telle recherche nationale ou internationale et les projects de développement jugés nécessaires ou souhaitables afin de combler des lacunes existant dans ces connaissances;

e) Entreprendre, quand on le jugera opportun, des recherches en commun et élaborer des projets de développement dans ce but;

f) Proposer et quand cela sera nécessaire, adopter des mesures susceptiples de déterminer la standardisation de l'outillage scientifique, des techniques et de la nomenclature;

g) Etudier d'une manière comparative les législations relatives à la pêche en vue de recommander aux gouvernements des Etats Membres de les coordonner dans la mesure du possible;

h) Encourager les études relatives à l'hygiène et à la prophylaxie des maladies professionelles des pêcheurs;

i) Aider par ses bons offices les gouvernements membres à obtenir le matériel et l'outillage essentiels;

j) Etablir des rapports sur toutes questions relatives à tous les problèmes océanographiques et techniques, tel que cela peut lui être recommandé par les gouvernements membres ou par l'Organisation des Nations Unies pour l'Alimentation et l'Agriculture, et s'il le juge opportun, par d'autres organisations internationales, nationales ou privées, ayant des intérêts connexes;

k) Présenter un rapport annuel sur ses activités aux gouvernements membres et à la Conférence de l'Organisation des Nations Unies pour l'Alimentation et l'Agriculture, adresser chaque fois qu'il le jugera nécessaire tous rapports à cet organisme sur les questions de sa compétence.

On peut avoir quelques idées sur la diversité de l'activité du Conseil en jetant un coup d'oeil au programme qui a été adopté lors de la session tenue à Monaco, du 14 au 19 octobre 1954. Chaque Comité a son propre programme de travail. Le Comité de l'Exploration s'occupe des Clupéidés, des thons, des Crustacés comestibles et des fonds chalutables. Ceci inclut

des questions telles que l'établissement de cartes concernant la distribution quantitive des oeufs de Clupéidés, l'étude de l'âge et de la croissance; l'amélioration des statistiques de pêche, afin d'obtenir des chiffres exacts concernant les quantités pêchées; la distribution bathymétrique et géographique des différentes espèces de thons; la biologie des crustacés comestibles; l'établissement de cartes de chalutage pour chaque pays et l'établissement de relevés des quantités de poissons de fond pêchés au chalut.

Le programme du Comité de la Production comprend la classification des bateaux, des engins et des méthodes de pêche, l'étude de la réglementation et de la formation professionelle des pêcheurs, le rassemblement d'informations concernant les lieux de pêche et les saisons de pêche, ainsi que les conditions de sécurité et de travail des pêcheurs.

Dans le programme du Comité de l'Utilisation, on trouve les questions suivantes: transport et préservation du poisson par le froid, étude de la production de farine, huile et sous-produits du poisson, et des conserves.

Le Comité des Eaux Intérieures a été appelé à discuter de questions relatives à la pollution, à la valliculture, à la mise en valeur des lacs de barrage et à la salmoniculture.

Enfin, le Comité de l'Economie et de la Statistique, l'un des derniers créés par le C.G.P.M. doit s'occuper des conditions générales économiques se rapportant aux pêches en Méditerranée, et aux statistiques; il est également chargé d'établir un catalogue des animaux marins de la Méditerranée.

Ainsi qu'on peut le voir, cela représente un programme extrêmement ambitieux et qui ne peut être mené à bien actuellement par le personnel limité dont dispose le C.G.P.M. et avec les moyens qui lui sont offerts. C'est un programme de travail qui suppose avant tout un élargissement des connaissances et relatives à la pêche en Méditerranée. Pour le mettre en oeuvre il est indispensable de pouvoir disposer d'une collaboration continue et progressive entre tous les pays membres du C.G.P.M. et la réunion d'Istanbul donnera une idée du progrès qui a pu être réalisé au cours des deux dernières années et permettra préciser le chemin dans lequel le Conseil et ses comités techniques doivent s'engager.

Fisheries Administration in Turkey

HAYDAR AYTEKİN

The following article is a reproduction of the report in "Fisheries Administration in Turkey" which was prepared for the fourth meeting of the G.F.C.M.

I — Measures Taken In Regard To:

A. Biological fisheries research.

Since 1951 the Hydrobiological Institute at Balta Limanı, Istanbul, carried on scientific research in marine and fresh water fisheries. The migration routes of mackerels *(Scomber scomber)* and bonitos *(Sarda sarda)* were studied by the Institute. More than 25 lakes were investigated, and measures such as delimitation of closed seasons, selection and artificial breeding of commercially important species were taken by the central fishery authorities in conformity with the findings of these investigations.

The Hydrobiological Institute is attached to the University of Istanbul and is partially subsidized by the Meat and Fish Office.

Considering that purely scientific research work was not enough for the solution of various practical problems which the administration was faced with, it was decided that a Fishery Research Center be set up to undertake investigations of immediate problems, such as determination of occurence and dynamics of commercially important species, testing different fishing gear and methods and dealing with other technological matters required for the rapid improvements of the techniques used by the industry. The Center was opened in May 1955.

Extensive biological researches were undertaken in the Black Sea and the Sea of Marmara. A series of scientific reports have been recently published.

Exploratory fishing for the purpose of finding better fishing gear and methods is also carried on by the Center. Different type of nets in-

cluding California type purse-seines, Italian Lampara nets, Danish trawls, etc. are being tested to find out the need for local gear used at present, or the best possible gear to be introduced into turkish fishing industry.

B. F i s h i n g .

a) Restrictive provisions:

1 - Restrictions of international consequence:

The extent of turkish territorial waters is three miles from the coast. The legal background of the three mile extent is not, however, well defined. This matter has therefore been subject of careful studies regarding the definition of the extent, base lines and other aspects of territorial waters. The matter is still under consideration by an ad hoc interministerial committee.

In connection with fishing there is no international agreement made with other contries.

2 - Restrictions of national consequence:

Fishing regulations now in force are very old and far beyond to meet the requirements of our developing fishing activities. Therefore, a draft law on fisheries has been prepared and submitted to the Grand National Assemblee. This draft law includes provisions for marine and fresh water fishing, fish trade, industry, fishery inspection and administration.

According to the existing regulations the Ministry of Economy and Commerce has the authority to enforce seasonal or local prohibitions.

Trawling in the Bosphorus, the Sea of Marmara and the Dardanelles and within three miles from the coast in general is forbidden by law.

b) Provisions facilitating exploitation:

1 - Fishing ports:

In cooperation with the Ministry of Communications a project has been made to build new fishing ports or to improve the existing ones in 24 fishing towns. These ports will receive financial aid from the Government and no charge, fees or taxes will be collected for port facilities provided to the fishermen.

2 - Boats and gear:

Technical studies as to the improvement of fishing methods, gear and boats are being carried on by the Fishery Research Center of the Meat and Fish Office.

In this connection reference can be made to the experiments undertaken on the California type purse-seines, wing trawls and other type of nets and to the alterations of local purse-seines "Girgir". An extensive study of the turkish fishing boats and boat building in this country is being carried on very intensively. It is hoped that all these activities will lead to the improvement of the methods and means used at present by turkish fishermen.

Twine was a limiting factor in fishing operations, especially in recent years due to the difficulty of obtaining foreign currency required for the purchase of twine from abroad. Early in 1955 it was found out that twine could be made in one of the existing thread factories belonging to the Government. Total annual need for twine was estimated to be around 50 to 80 tons. Orders for 50 tons of twine of various thickness were placed by the Meat and Fish Office to the factory which delivered the first lot of 25 tons that was distributed to the fishermen in the Istanbul area. The second and third lots were allocated to other fishing areas.

Marine engines for fishing boats were another important problem to be solved. The Meat and Fish Office purchased from Germany 235 diesel engines ranging from 5 to 150 horse powers. These engines are to be distributed to the fishermen according to their requirements.

The problem of credit to the fishermen who cannot afford down payment for the purchase of equipment, such as twine and engines, was taken up and regulations for the provision of such credit was set forth in 1953. The Agricultural Bank of Turkey was given the authority to make necessary loans to the fishermen and the fishing industry.

The Bank earmarked for this purpose T.L. 15 millions out of its funds.

C. Sale of fishing products :

In major landing centers the wholesales are carried out by auction in fish markets which are supervised and managed by the local municipalities. Those who buy fish on wholesale are exporters, retailers, canning factories and the middlemen. These buyers are registered in the fish market. Each buyer pledges with the superintendant of the market a certain amount of deposit in proportion to the volume of his transaction

Fish is sold in retail shops which are concentrated in certain parts in each town. As the customers are very particular about the freshness, and the fish is being sold the same day as it arrives to the shops in coastal towns the quality of fish sold in retail is excellent. But retail fish

shops are usually poorely equipped. In order to introduce modern fish retail shops the Meat and Fish Office has opened pilot shops in Ankara.

The fish trade is not subject to price control. Prices are formed according to supply and demand.

The technical assistance and other facilities including price supports, provided by the Government in various fields of the fisheries increased the amount of landings so that larger quantities of fish were exported in recent years. The amount exported in 1951 was 2, 947 tons of a value T.L. 2.504 million as compared to 15,051 tons of a value 10.055 million in 1955.

D. Transportation.

The construction of cold-storage and ice making plants now in operation made the distribution of fish to inland centers possible. The implementation of such a distribution plan required, first of all, the establishment of a refrigerated transport system. Insulated trucks and railway vans were provided by the Meat and Fish Office. In addition to these, the Office operates now 8 fish transport boats, varying each from 20 tons to 100 tons carrying capacity.

E. Treatment and processing of fish products.

About 70 percent of the landings are consumed fresh and 25 percent is salted, smoked, dried or otherwise processed.

Ice made available at fairly cheap prices to the fishermen is used to an increasing extent. The quantity of fish frozen in the cold-storage plants increases from year to year.

Apart from the industrial plants set up by the Government with the view of developing fisheries, there are a number of industrial concerns owned by private enterprise at major fishing centers. In this connection 45 canning factories, a number of cold storage plants, salting, smoking, curing plants can be mentioned.

For further improvement of the treatment and processing of fish products extensive technical studies are being made. A laboratory which is to carry on technological research on the treatment, processing and quality control of fish products is being set up.

F. Statistics and Information.

In order to collect statistical data on production and distribution of fish a collaboration with the local Government authorities, chambers of

commerce or municipalities in the main fishing centers is established. Returns are filled in by these authorities and sent back to the Meat and Fish Office in Ankara.

For market investigations information on prices and other conditions prevailing in the market is obtained through technical field officers.

Pertinent statistical data are published in the Balık ve Balıkçılık (Fish and Fisheries).

II — Services and Organizations Participating in The Formulation or Application of the Above Measures:

A. Governmental.

The Ministry of Economy and Commerce is responsible for fisheries in Turkey. The Meat and Fish Office, an autonomous Government agency under the control of the Ministry of Economy and Commerce is in charge of the application of measures regarding the fisheries. The Meat and Fish Office which was set up in 1952, has established local services in major fishing centers.

The most difficult and time-consuming factor in connection with the development of the organization of the Meat and Fish Office appeared from the outset the problem of obtaining qualified staff in various branches. The management of the Office made it a point to get the personnel trained. Several people were sent abroad, namely to Norway, Denmark, the United Kingdom and the U.S.A. Counterpart assistants were assigned to work with FAO/ETAP experts sent to this country. Training courses in special fields, such as biology, refrigeration and fish handling were organized. But still more trained personnel are needed to meet the requirements of an administration which has to deal with the problems of an expanding fishing industry.

Apart from the Ministry of Economy and Commerce, the Ministry of Finance is concerned with the lease of fishing rights in the lakes. The Ministry of Communications together with the Ministry of Public Works, takes care of port installations and facilities.

B. Non. Governmental.

There are a number of fishermen's cooperatives in the main fishing centers. These cooperatives are operating as producers organizations

A Fishermen's Association in Istanbul set up to protect the interests of the fishing industry and social welfare of the fishermen proved to be

effective in regulating the amount of fish to be landed in the last two years.

C. F A O and I C A A s s i s t a n c e :

FAO has rendered invaluable technical assistance by sending experts in various fields of fisheries, namely in biology, fish meal and oil, refrigeration, fishery economy and canning. FAO has also supplied equipment for experimental and research purposes.

In this connection some references might well be made to the valuable aid in grant by the ICA who supplied 8 fishing boats, 8 transport vessels and three research boats, including the "Arar".

Aknowledgement is also due to the technical assistance provided by the same Administration by sending a team of purse-seine specialists who are now working on experimental purse-seining.

Development Of Refrigeration In the Fishing Industry In Turkey

Dr. N. ÖZIŞIK

Turkey, which is bounded by sea on three sides has very rich fish resources, the greater proportion of which are pelagic species, which are available in large quantities only for certain periods of the year. Although there is fishing along almost all the coast, the bulk of the fish is landed in only a few production centres and the fishing grounds being at a short distance from the coast, the quality of the landed fish is excellent.

But then arises the problem of handling and preserving because the climate is rather warm and the catches are subject to fluctuations. Cold-store preservation is a suitable means of keeping the surplus catches. Until very recently, however, no adequate cold preservation and transport facilities were available in Turkey for fish handling purposes. The transport of fish to inland consumption centres was very limited; fish was not available on the market when there were no catches, and accordingly retail fish prices fluctuated considerably. A solution to this problem for the whole country needed large scale planning. In 1953, such a plan was projected for constructing cold stores, freezing stores and ice-making

plants for fish and general food storage purposes at the main centres of fish production, and the ET ve BALIK KURUMU (The Meat and Fish Office of the Turkish Government) was given the task of realising the cold store construction scheme and operating the plants constructed under this scheme.

The location of the cold stores in operation and those still under construction is shown in Fig-I. In all these space is available for general food storage purposes as well as for fish. Cold stores for fish preserving are of two types: Ice making and chilling only; ice making, chilling and freezing.

The purpose of the former is to facilitate the distribution of catches by supplying ice, providing refrigerated storage for collection, and if necessary, a few days storage of the fish before inland distribution. The purpose of the latter is to preserve the season's peak supplies and the surpluses which cannot be marketed fresh, until periods when marketing conditions are more favourable.

In all the cooling plants the refrigeration machinery is designed for the use of ammonia as a refrigerant, and direct expansion is adopted for cooling the deep freeze-stores and freezers. Temperatures are 0° C in the air blast freezers. Ice is made in 135 and 25 kg. blocks and supplied crushed to the fishermen.

After completing the construction of cold stores in the chief production centres along the coast, smaller cold stores are planned for construction in many inland towns in order to complete the refrigeration chain.

There being enough cold stores and ice making plants in operation, it has become possible to plan the establishment of a regular fish transport system with insulated and refrigerated trucks and railway vans. Military units, hospitals, boarding schools and retail shops at same inland towns such as Ankara, Erzurum, Konya etc., are now supplied regularly with fresh frozen fish. The fish is distributed directly from the cold stores using the Office trucks. Some 20 insulated and refrigerated trucks, of 5 ton capacity, and 5 insulated railway vans have been allocated by the Office for this purpose. For sending fish to the export markets, the Office operates 8 fish transport vessels (3 of 177 gross tons, 2 of 133 tons, 1 of 90 tons and 2 of 40 tons) all with insulated holds, to carry fresh fish at 0° C and frozen fish at temperatures as low as —18° C.

In the fish distributing scheme the cold chain would be incomplete without the final link of properly equipped retail shops. With this in view, fish retail shops with freezers, have by the initiative of the Office been opened in certain districts in Ankara.

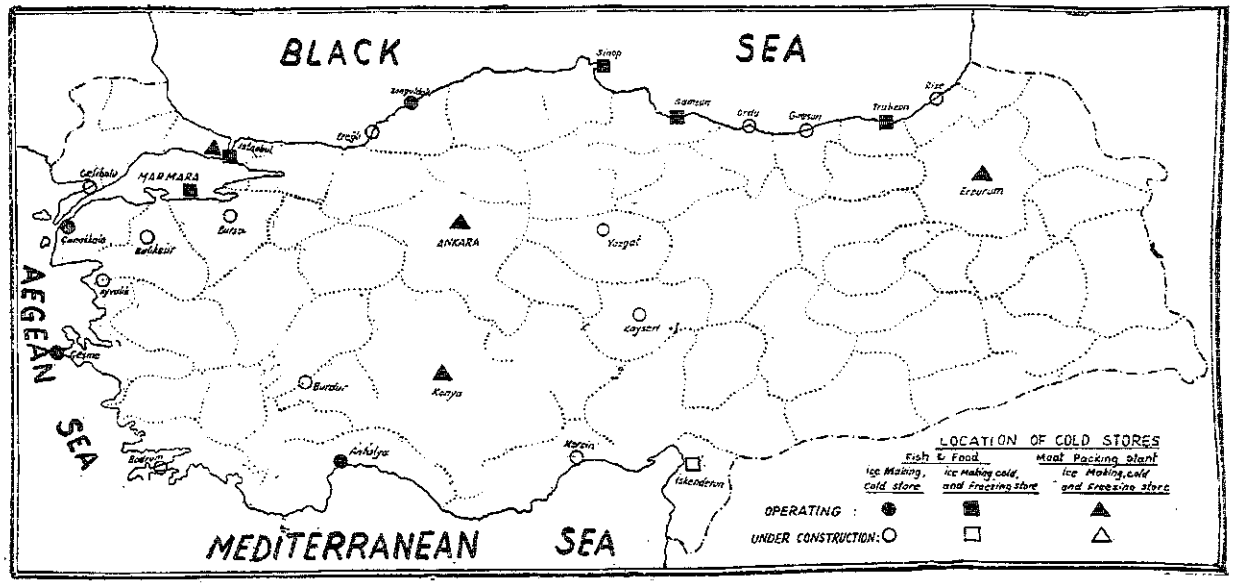

Fig. 1 — Location of cold stores constructed by ET ve BALIK KURUMU.

The Hydrographycal Peculiarities Of the Seas Surrounding Turkey

Dr. HÜSEYİN PEKTAŞ

The main oceanographycal or hydrographycal problems awaiting scientific investigation in Turkey are completely different of those encountered elsewhere in the world. Our seas may be termed as unique from an oceanographycal stand point.

Turkey has a coastline of over 3500 miles starting from Hopa on the south-eastern coast of Black Sea, and extending up to the southern end of the Iskenderun Bay on the North Eastern Mediterranean Sea. European section of Turkey is surrounded by the Black Sea on the north, and by the Sea of Marmara and Aegean Seas on the south. Other geographycally important parts on the coastline include the straits of Istanbul (Bosphorus) and Çanakkale (Dardanelles) in addition to the Sea of Marmara and the Aegean Sea.

One of the first subjects covered by the students of oceanography is the well-known relation between the chlorinity and the salinity values. According to this golden rule salinity could be calculated from the chemically determined chlorinity figure depending on the empirically established equation which is applicable to all oceans with very few exceptions. There is a considerable controversy between the scientists concerned, whether the classical equation could be of use for the Black Sea water as it is, or after it is modified.

The salinity of the Black Sea is about %50 lower than the oceans in general, and actually it could be considered as a brackish water rather than the real sea water since its average salinity figure ($^0/_{00}$18) is lower than $^0/_{00}$24.70. Due to these peculiarities the well-known tables prepared by LA FOND which are universally used in general oceanography and in dynamical calculations are hardly of use in the case of the Black Sea. That is why the said tables have to be modified and or

extended so as to include the lower salinity values such as those encountered in the Black Sea. No oceanographer has to face such problems elsewhere in the world.

Contrary to the Black Sea water, the deep waters of the Eastern Mediterranean and the Aegean basins are so highly saline that the above-mentioned tables are again short-coming, and the student of oceanography to be engaged in the study of these seas, has to extend and expand the tables for his own use again.

It is nearly a century now, since it was found that the water below an average depth of 200 meters in Black Sea is stagnant and contains H_2S gas instead of oxygen. This peculiarity has a great influence on the hydrography of the Black Sea, especially from the fisheries point of view, since no aerobic life could exist below 200 meters. No such waters are found elsewhere in the world except in some small fjords. Therefore, this is constituting another unique problem for the oceanographer engaged in the studies of the Turkish Waters.

The annual temperature cycle in the Black Sea is as wide as that of the whole of the Atlantic Ocean. Some coastal parts of the Black Sea and the whole of the Sea of Azov are freezing for 40-70 days in a year, and it is not exceptional to see some floating ice from the Roumanian coasts clogging the Bosphorus during severe winters. The surface temperature of the Black Sea could be as high as 26° C during the summer months. Such a wide range of temperature cycle is not encountered on the latitudes of the Black Sea, elsewhere in the world.

The deep stagnant water of the Black Sea has a comparatively high and constant temperature throughout the year. It is hard to accept that this deep water was formed in the Black Sea. When and how the said bottom water was formed is the subject of a number of studies in a number of Black Sea countries at present.

The Sea of Marmara is unique from another point of view. There are two distinctly different water layers in the Sea of Marmara, the upper one of which has an average thickness of 15-35 meters, and an average salinity of 22-24‰. Temperature of this water is depending on the surface temperature of the Black Sea and its range is between 5° - 26° C according to the season of the year. The deeper water of the Sea of Marmara is of Aegean origin and has a more or less constant temperature throughout the year, (14°-15° C) and a constant salinity of about 36-38‰. In other words a very sharp halo-cline is existing in the Sea of Marmara which prevents the normally expected vertical mixing.

The straits connecting the Black Sea to the Sea of Marmara (Bos-

phorus) and the Sea of Marmara to the Aegean Sea (Dardanelles) have been the subject of several studies. The latter one is a water-way which permits the free passage of both the upper south-bound surface current and the north-bound deep current, one above the other, towards opposite directions all the year round; while the former one is restricting the passage of the deeper water into the Black Sea during a certain period of the year.

Estuary studies and two-layer systems are among the most important problems in hand, in a number of scientific institutions at present. They are working on the mixing mechanism of the two-layer systems and on turbulance, through salinity and temperature determinations. The water exchange between the Atlantic and the Mediterranean Seas, for example, has been studied very carefully where there is only about 1° C difference in temperature and about 1°/₀₀ difference in salinity between the upper and the lower currents. In spite of such a narrow limit separating the two currents it has been possible to determine the volume of the water exchanged, as well as the amount of salt involved in the balance. In the Turkish Straits on the other hand, all these qualities seem to be highly exaggerated as it is indicated by the 18°/₀₀ salinity difference and ±10° C temperature difference according to the season, between the upper and the lower currents. That is why the Turkish Straits are constituting the ideal spots for the study of two-layer systems.

The Aegean Sea is cut off from the Levantine Basin of the Mediterranean Sea by several Straits among which the C a s o and S c a r p e n t o Straits are prominent because of their considerable depths. The deepest passage is 880 meters deep. It is strange that on the northern side of these straits the deep waters of the Aegean basins are warmer and more saline than the deep waters of the corresponding Mediterranean basins. Water exchange between the two seas through these channels is not very well understood as yet, and it is being studied by us at present. The origin of the deep waters of the Levantine Basin is said to be the Sea of Adria, contrary to what was expected.

The surface salinity can reach nearly to 40°/₀₀ during summer months around the Aegean and Mediterranean coasts of Turkey. Annual temperature range is about 10° C, changing between 16 and 26 degrees Centigrade.

As it would be understood from the above lines the hydrographycal and oceanographycal studies related with the seas surrounding Turkey are of a peculiar type uncommon with the rest of the world, and special precautions and efforts are required to be taken in order to attain satisfactory results.

Facts And Problems Offered by the Erythrean Invaders into the Mediterranean

CURT KOSSWIG

HÜLÂSA:

Şimdiye kadar Akdenizde tespit edilen 20 den fazla nev'in hepsinin ancak Süveyş Kanalı açıldıktan sonra Akdenize geçtikleri muhakkaktır. Demek oluyor ki geçit açılıncıya kadar tamamiyle başka şartlar altında yaşamış olu bu nevilerde Akdeniz şartlarına lüzumlu olan bütün intibak kabiliyetleri preadoptasyonlar tarzında mevcut idi. Akdenize geçtikten sonra bu tropikal nevilerin bazıları hiç bir değişiklik göstermemektedir. Bazılarında ise tahmin edilen fizyolojik intibakları yanında yapılışlarında da değişiklikler olmuştur.

İhtimal olarak yalnız fenotipus'a ait bu değişiklikler yeni bir supspesies'in veyahut da bir spesie'in teşhisine sırf sistematik bakımından kâfi geldiği gibi görünürse de irsî konstitüsyonu itibariyle Akdeniz ve Kızıl denizdeki aynı nevilerin mümessilleri farklı olmadıklarından böyle bir usule baş vurulması müsait görülmemektedir.

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With the opening of the Suez Canal in 1869 probably the greatest biological experiment was started which men ever began. TORTONESE was the first to draw attention to this fact. On both sides of the canal before its construction faunae lived which, from the point of view of their history as from that of their ecological requirements, are thoroughly different from one another. Although the Mediterranean, and especially its Eastern region, is a deep and a warm sea with a high salt - concentration, both factors of great importance for marine life, temperature and salinity, are higher in the Red Sea than in the Mediterranean: Whereas reef building corals do not exist in the Mediterranean of to day the Red Sea is famous by the mighty development of its reefs and the very characteristic fauna accompanying them. Up to the end of the

Tertiary the Mediterranean was in open connection with the Indian Ocean from where the modern Red Sea fauna derived later. But with the end of the Tertiary geological events occured by which the loss of the last rest of the old and wide connection of the two basins was evoked: After the drying-up of the Syrian-Iranian Sea the Mediterranean was closed at its Eastern end, only a connection with the Atlantic Ocean being preserved somewhere in the West for most of the Quarternary. Together with these geological changes during the last period of our planet the climate changed too. As the result of the cooling off of the waters of the glacial Mediterranean its old reef building fauna of a completely tropical type was substituted gradually by Northern elements of boreal or glacial origin. But in the Quarternary during relatively short spaces of time the climatological conditions changed very much. After a cooling for some thousand years a much milder time began during which the mean temperature in this area could be even higher than it actually is. In the so called warm interglacial times a reoccupation of the Mediterranean by warmth loving species can be observed; but as a general rule it can be said that practically all these newcomers in interglacial periods did not come from the East where the old connecting zone of Iran, Syria and Palestine was dry land but from the West, i. e. from the tropical and subtropical Atlantic Ocean. Four great glaciations are distinguished by the geologists, each of them followed by a warm and mild interglacial, the last of which is our modern time. During the interglacial periods, as the result of the melting of the large ice masses which were deposited at the poles of the foregoing glacial, the sea level rised up very remarkably. In the last interglacial a sea level, 15 meters higher than today, is generally accepted by geologists. The surface of the oceans would be raised 55 meters in the case all ice masses of the polar regions of our time would be melted completely. So it may seem contradictory that in the interglacial periods, as the result of the rising up of the sea level, for at least 15 meters, a retroingression of tropical elements from the East into the Mediterranean did not occur. Even after the last glaciation a warm period is known in which the level of the seas stood 3 meters higher than today. Should we not expect that under such conditions animals living in the Red Sea would enter the Mediterranean via the shallow isthmus of Suez and vice versa? As far as the earlier interglacials are concerned two facts have to be taken into account: 1. the formation of the Red Sea is - geologically speaking - a very late event. The Red Sea itself is only of glacial age i. e. the deep graben which today is filled by water masses coming from the Indian Ocean had first to be built up by changes in the crust of our earth, only later its importance for an exchange of the faunae on the two sides of the modern Red Sea can

begin to be a problem of historical zoogeography. Professor GOHAR from the Marine Station at Ghardaqa has discussed masterly the geological history of the Red Sea with its often changing scenery during the Quarternary. Furthermore, even in the case that species from the Red Sea would have invaded the Mediterranean during one of the earlier interglacials such tropical invaders coming from the Indian Ocean would have been destroyed just as those coming from the tropical Atlantic in the same time by the last glaciation when for the last time boreal conditions reigned in the Mediterranean zone. 2. It is not impossible that during the postglacial warmth period a water way connection between the two seas existed as it was certainly present in historical times when at different occasions canals were built up between the Red Sea and the Mediterranean. But, as it seems, all these earlier canals made use in part of an arm of the Nile; by this large quantities of fresh water flew into the exchange zone, the passing over of marine species from one sea to the other may have been hindered completely. GOHAR thinks that some sessile and sufficiently euryhaline species of Algae or Invertebrates may have been transported passively by boats from the one to the other side. As far as we know no species of fish used these earlier canals for moving between the two seas. Before the opening of the Suez Canal the fish fauna of the Eastern Mediterranean was despite some endemic species the nearer relationships of which are unknown, of purely Atlantic origin. We have to admit that after the end of the cold period of the last glaciation immigrants from the tropical and subtropical Atlantic entering the Mediterranean by the Strait of Gibraltar, occupied many of the ecological niches now suitable for themselves and substituted many of the Northern species which withdrew towards cooler areas by the end of the glaciation. Only a small number of cold loving species persists as relics in the modern Mediterranean up to now.

BEN TUVIA reports 21 Erythraean species which are known today off the Palestinian coast. By this author (KOSSWIG) 10 such species were described from the Bay of Iskenderun in 1950. In the meantime some of them even reached the Southern frontier of the Aegaean Sea or entered its Southern parts as far as Samos! In less than 90 years practically the whole Northern coast of the Eastern Mediterranean has been occupied by species coming from the Red Sea. These species are members of the most different families of fishes, they are partly without any nearer systematical relationship to one another and they have extremely different feeding habits and biologics in general. To a lesser degree also the Southern coast of the Mediterranean seems to have been occupied by these invading species, but more details are unknown. The wandering towards the North along the Palestinian and Syrian and westwards along

the Anatolian coast has been facilitated by the presence of an anticlockwise current in the Eastern Mediterranean. This expansion of Erythraean species in a relatively very short period is the more remarkable as it was done against the gradient of temperature and salinity. The majority of these species reproduces since many years in the Mediterranean and it is probable that they lost all contact with their relatives in the Red Sea. Unfortunately our knowledge of the migration through the Canal are very meagre especially for the first decades of its existence; also in later years only occasional observations during shorter periods are available. But it can be taken for very probable that the way through the Canal at every period of its existence was a difficult one for species living normally in the clear waters of the Red Sea where temperature and salinity show only slight annual changes. In the first years after its opening besides the high temperatures the rich salt concentration caused by the melting salt deposits of the Bitter lakes may have been a barrier for wandering individuals in the Canal. Later the silty waters of the Canal with its reduced oxygen content may have played the same role as hindering factor for migration. Nevertheless more than 20 species succeeded in moving through, from South towards North. On the other side the number of fish species achieving a migration in the contrary direction, i.e. from the Mediterranean into the Red Sea is much more restricted, invading species of economic importance occur up to now practically only in the Gulf of Suez itself. The reason for this situation may be found i.a. in the fact that the ecological niches in the Red Sea are occupied since long by the numerous species which invaded the Red Sea after its formation from the Indian Ocean. When, on the other hand, Erythraean invaders into the Mediterranean are so succesful in this sea we have to imagine that there are in the Eastern Mediterranean ecological niches free and suitable for the newcomers in which they thrive well although the conditions of the new environment in general may be called pejus conditions in comparison with those in their old homeland. From the theoretical point of view this fact is highly interesting. As the succesful invaders show, they are well adapted to very different external conditions which to try they found never any chance before the opening of the Canal. In other words adaptations necessary for life in a new environment are not the result of a stepwise accumulation of suitable hereditary changes under the selecting control of the new biotop but merely all essential qualities are still present as preadaptations in a population even before selection could begin. It is very improbable that only certain individuals of the Red Sea population of a fish species which bore a special suitable hereditary constitution for life under Mediterranean con-

ditions began the wandering through the Canal which by its own make-up would ask for adaptations in a completely other direction. It is much more probable that at least all those species of the Red Sea which invaded later the Mediterranean bear in all their individuals a hereditary constitution which allows them to live also under others than the actual conditions of life. By a genetical term we may say that the reaction capacity (Reaktionsnorm of the German authors) of these species is sufficiently wide so that self regulation of the organism corresponding to the changing environmet is easily done. In the majority of the Erythraean species now widespread in the Mediterranean besides the physiological regulations which certainly occured no morphological changes have been stated. But in some of them also the phenotype changed in such a fashion that it would be easy to describe the Mediterranean representatives of these species as special races or subspecies of their Erythraean oder Indopacific ancestors. BEN TUVIA describes two of the invaders which in the meantime gained economical importance for fisheries at the Palestinian and Anatolian coast and which show clear deviations from their congenerics in the Red Sea: e.g. the Indopacific *Sphyraena obtusata* C. &V. is now off the coast of Palestine usually more abundant than its Mediterranean relative *Sphyraena sphyraena* L. But whereas the first species can reach a length of nearly 2 meters in Indopacific waters its representatives in the Mediterranean reach mostly only 10 - 20 cm, the maximum being 35 cm. The same is true for another immigrant from the Red Sea into the Mediterranean: *Mulloidichthys auriflamma* Forsk. which is abundantly caught in the bay of Iskenderun. According to BEN TUVIA this species which attains a length of 40 cm in the Indopacific reaches a maximal length of ca. 20 cm in the Mediterranean. In this species also some morphological changes in comparison with its relatives in the Red Sea can be found. It must be insisted upon the fact that such new characters do not prove in any way hereditary difference between the fishes of the two seas; more probably, the hereditary background being the same, different phenotypes develop as the result of different conditions of life. Another example under this heading may be the case of a species of *Upeneus,* a genus near to *Mulloidichthys* cited above. Under the name *Upeneus tragula* a fish was described by former authors from the Suez Canal itself. Later I found some small individuals of this genus in our material from Iskenderun. The description of *Upeneus tragula* by WEBER and DE BEAUFORT being in accordance with some of the characters of the *Upeneus* from Iskenderun I thought to be right in giving that name to this newcomer from the Red Sea. As BEN TUVIA says in his publication Professor FOWLER of Philadelphia is of the

opinion that one of these fishes sent to him from Israel represents a new species. Although the possibility exists that a species was never discovered in the Red Sea from where it immigrated into the Mediterranean, another interpretation seems more probable. This would be the assumption that under the changed conditions in the Mediterranean a well known Indopacific species, *Upeneus tragula*, got such a different phenotype that from the pure systematical point of view the description of its Mediterranean representative as a new species is justified.

On the basis of the list offered by BEN TUVIA the following compilation of the Erythraean immigrants into the Mediterranean can be given. The list published earlier by KOSSWIG in 1950 is completed herewith.

Table 1

Name of the species	Palestine	Iskenderun	Rhodes	Samos	Remarks
Dussumieria productissima Chab.	+	+			
Saurida grandisquamis Gthr.	+				
Aphanius dispar Rüpp.	+				
Hemirhamphus far Forsk.	+	+	+		
Dollfusichthys sinus-arabici Chab.	+				first appearance 1953
Holocentrum rubrum Forsk.	+	+	+		
Sphyraena obtusata C. &V.	+	?			
Hepsetia pinguis Lac.	+	+			
Mugil spec. A (following BEN TUVIA)	+				these two species probably of Erythraean origin.
Mugil spec. B (following BEN TUVIA)	+				
Istiophorus gladius Broussonet	+				one individual found
Caranx djeddaba Forsk.	+				a single individual
Apogon thurstoni Day	+				
Leiognathus klunzingeri Steind.	+	+			
Mulloidichthys auriflamma Forsk.	+	+	+		
Upeneus spec.?	+	(+)			described as *U. tragula* by KOSSWIG
Siganus rivulatus Forsk.	+	+	+		
Platycephalus indicus L.	+				
Callionymus cf. brunneus Fwl. (BEN TUVIA)	+				new spec. fide BEN TUVIA, 53
Stephanolepis ocheticus Fraser-Br.	+	+	+	+	= *T. lunaris*
Tetrodon spadiceus Richards.	+	+	+		KOSSWIG, 1950

As will be seen from the table presented above there is a clear gradient for the number of species from the Palestine coast towards the Aegaean Sea. One has the impression that the immigration process of Erythraean species is even now continuing. On the other hand our knowledge about the time in which the Canal is passed through, the

stages which are the most suitable ones for wandering, the details of the biology of the different species is bitterly incomplete. If we consider that the filling up of the stock of species in a sea in such a way that all ecological niches will be satisfactorily occupied can be of great economic importance too, the problem of the Erythraean invaders in the Mediterranean gains further interest. As it is known the scientists of the Soviet Union made many succesful acclimatisation experiments by which invertebrate species of the Black Sea were transplanted to the Caspian Sea. It is hoped that in this way the fishery productivity of the Caspian will be raised. Among the Erythraean immigrants into the Mediterranean *Mulloidichthys auriflamma* is one of the highest estimated food fishes. Others as *Hemirhamphus* and *Holocentrum* are regularly sold on the fish market in Iskenderun. The small species as *Hepsetia, Dussumeria, Leiognathus* may be used as raw material for fish meal. When found in abundancy; the Erythraean *Mugil* species will probably find suitable places for their development in the warm estuaries also of the Anatolian Southern coast. The countries of the Eastern Mediterranean have to be highly interested in all activities of Egypt by which a better knowledge of the biology of the Suez Canal and its neighbour seas will be assured.

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Türkiye Pelâjik Balıkçılığına Bakış

(A Survey On Pelagic Fishing In Turkey)

İLHAM ARTÜZ

ABSTRACT:

The commercial fisheries in Turkey mainly depend on pelagic species. It is a well-known fact that most of the pelagic fishes of turkish seas migrate to the Black Sea for grazing and fattening. They usually spawn in the warmer waters of the Sea of Marmara and Aegean Sea, as a consequence of which they migrate away from the Black Sea during the fall of each year. In the course of these migrations they are caught in big quantities in and around the turkish straits.

Seasonal occurrence of pelagic fishes and their commercial importance are discussed in this article. The species which are mentioned in this article are:

Torik+Palamut	*Sarda sarda*	Bonito
Uskumru	*Scomber scomber*	Mackerel
İstavrit	*Trachurus trachurus*	Horse mackerel
	and	
	Trachurus mediterraneus	Jack mackerel
Hamsi	*Engraulis encrasicholus*	Anchovy
Kolyos	*Pneumatophorus colias*	Spanish mackerel
Lüfer	*Temnodon saltator*	Bluefish
Kılıç	*Xiphias gladius*	Sword fish
Orkinos	*Thunnus thynnus*	Bluefin Tuna
Sardalya	*Sardina pilchardus*	Sardin
Kefal	*Mugil sp.*	Mullet
Gümüş	*Atherina sp.*	Silverside
Mersin	*Huso huso* and *Acipenceridae*	Sturgeon

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Memleketimiz denizlerinin arzettiği hususiyetler dolayısiyle balıkçılığın siklet merkezini pelâjik balıklar teşkil etmektedir. Zira bilindiği veçhile, Akdeniz, dip balıkçılığı bakımından ele alındığı takdirde nisbeten fakir denizler arasına girmektedir. Akdenizin sularının muayyen bir derinlikten sonra +13°C civarında homoterm oluşu ve Cebelütarık Boğazının bir eşikle okyanusların soğuk sularının buraya girmesine mâni teşkil edişi dolayısiyle buraya kuzey denizlerinin zenginliğini temin eden soğuk su seven formlarının yerleşmesi imkânsızlaşmaktadır. Akdenizin ikinci ve sun'i kapısı olan Süveyş kanalı da, sularının tuz bakımından zenginliği dolayısiyle büyük çapta canlı mübadelesine mâni teşkil etmektedir. Bununla beraber bu ikinci kapı Akdeniz için daha ümit verici görülmekte ve son on sene zarfında Türkiye sahilleri balıkçılığının veçhesini günden güne değiştirmektedir.

Sahillerimizi kuşatan ikinci büyük deniz olan Karadenizde ise vaziyet dip balıkçılığının daha da fazla aleyhindedir. Zira, bilindiği veçhile Karadenizin 150-200 metreden daha aşağıdaki derinlikleri her türlü hayvanî hayatın idamesine mâni teşkil eden hidrojen sülfür gazı ihtiva etmektedir. 1 litre suda 9 sm^3 ü bulan bu gaz sebebi ile burada ancak anaerobik bakteriler yaşama imkânı bulmaktadırlar. Bu sebepten Karadenizin 200 metreden daha aşağı derinlikleri balıkçılık için kapalıdır. 200 metre izobatının üzerinde bulunan derinliklerde ise sahil hattı bilhassa kıyılarımız boyunca o kadar dar bir bölge teşkil eder ki dip balıkçılığı yapacak sahalar ancak sahilden 3-10 mile kadar dar bir şerit içersine münhasır kalır. Karadenizin hususî hidrografik ve biyolojik şartları da burada yaşıyan balıkları bir tahdide tabi tutmakta ve tür adetlerinin azlığında mühim rol oynamaktadır. Bu şartların en başında hiç şüphe yok ki 200 metreye kadar olan ve canlıların yaşaması için elverişli bulunan sahanın tuzca fakirliği gelmektedir. Bu sebepten dolayı da, Akdenizin bir sürü stenohalin balık türü Karadenize yerleşememektedir.

Dip balıkçılığını Marmarada tahdit eden sebep ise gerek Akdeniz ve Karadenizin yukarıda zikredilen hususiyetlerinin Marmaraya tesir edişi, gerekse halen câri kanunî müeyyidelerin 3 mil içinde yapılacak tesirli balıkçılığa (Trawlcülük) mâni teşkil etmesidir. Egede ise karasularımızın darlığının balıkçılığımız üzerindeki tesirleri herkes tarafından bilinen millî bir dâva teşkil etmektedir.

Dip balıkları bilindiği veçhile denizin dibini teşkil eden kum, çakıl, kayalık, çamur v.s. gibi zemin üzerinde, yani bir satıh üzerinde yaşamaktadırlar. Buranın aksine olarak pelâjik balıklar suyun bünyesi içersinde

ve bir satha mukabil bir hacim içersinde yaşamaktadırlar. Pelâjik balıkların bu sebepten dolayı yaşama sahaları çok daha geniştir.

Akdenizin pelâjik balıkçılığı için, dip balıkçılığında önümüze çıkan hidrobiyolojik mahzurlar aynen câridir. Pelâjik balıklar için yegâne avantaj yaşama sahasının dip balıklarınkinden daha geniş olmasından ileri geçemez. Karadenizde ise bunun tamamen aksine olarak hüküm sürmekte olan hidrobiyolojik faktörlerin pesimum diye vasıflandıracağımız derecede kötü oluşu balıkçılığımız için bir şans eseri sayılmalıdır. Zira tabiatte câri kanunlara göre pesimum hayat şartlarını havi bölgelerde tür adedinin azalmasına mukabil buradaki vaziyete intibak edebilmiş olan türler gıda için rekabetin azalması dolayısiyle fert adedi bakımından zenginleşmektedirler.

Karadeniz kendisine komşu olan denizler veya okyanuslar ile mukayese edildiği takdirde burada yaşıyan türlerin sayısının bariz bir şekilde az olduğu derhal göze çarpar. Buna mukabil Karadenizin balıkçılık için elverişli (200 metre izobatına kadar) olan bölgelerinin hacmi ile halihazır balık istihsal durumu kıyaslandığı takdirde dahi Karadeniz yüksek prodüktiviteye sahip denizler arasına girebilecektir. Kaldı ki bugünkü balıkçılık istihsali azamiye yaklaşmaktan çok uzaktır. Karadenizde halen kullanılmakta olan av vasıta ve malzemesi balıkçılığı ancak sahil bölgesine inhisar ettirebilmektedir. Bundan dolayı da intensif bir balıkçılık yapılamamaktadır. Araştırma Merkezimizin yapmış olduğu müteaddit tetkik ve müşahedeler halihazır balıkçılık sahalarının dışında kat kat üstün balıkçılık imkânlarının bulunduğunu göstermektedir.

1954-1955 tarihleri arasında yapılmış olan bir tetkik seferi esnasında Karadenizde oldukça büyük sayıda fertlerden müteşekkil orkinoz (*Thunnus thynnus* L.) sürülerine rastladık ki bilindiği gibi Karadenizde bu sürüleri avlıyacak balıkçılık vasıta ve aletleri halen kullanılmamaktadır. İstavritlerin de sahilde bulunmadıkları mevsimlerde 60-70 mil açık denizlerde satıh sürüleri halinde gezindikleri müşahede edilmiştir.

Halihazır balıkçılığımız modern dünya balıkçılarının kullandıkları birçok vasıta ve aletlerden mahrum durumdadır. Pelâjik balıkçılıkla uğraşan balıkçılarımız da Eko-ses aletleri bulunmadığından bunlar ancak ya satıh sürüleri (gündüz) veya yakamozu görebilecek kadar derinlikteki balıkları (muhtelif mevsim ve şartlara bağlı olarak 3-8 metre) avlıyabilmektedirler. Ayrıca Karadenizin sert dalgalı tabiatı da her mevsim ve şartta avcılığa imkân vermemektedir. Et ve Balık Kurumunun ilk plânda ele almış olduğu mevzulardan birisi bu yukarıda saydığımız eksik ve mah-

zurların bir an evvel bertaraf edilmesi ve balıkçılığımızın ileri memleketler seviyesine ulaştırılmasıdır.

Bu mevzuda şimdiye kadar yapılmış olan etüdler ve atılan adımlar ilerisi için çok ümit verici olmuştur. Halihazırda balıkçılık yapılan sahaların dışında ve av mevsimi haricinde sürülerin mevcudiyetinin tesbit edilmiş olması, Türkiyeyi çevreleyen denizlerin hidrobiyolojik etüdlerinin tamamlanması ve elde edilen ve elde edilecek olan mahsulün kıymetlendirilmesi için yapılan geniş soğuk hava depoları şebekesi muvaffak olmuş başlangıçlar olarak kayda değer.

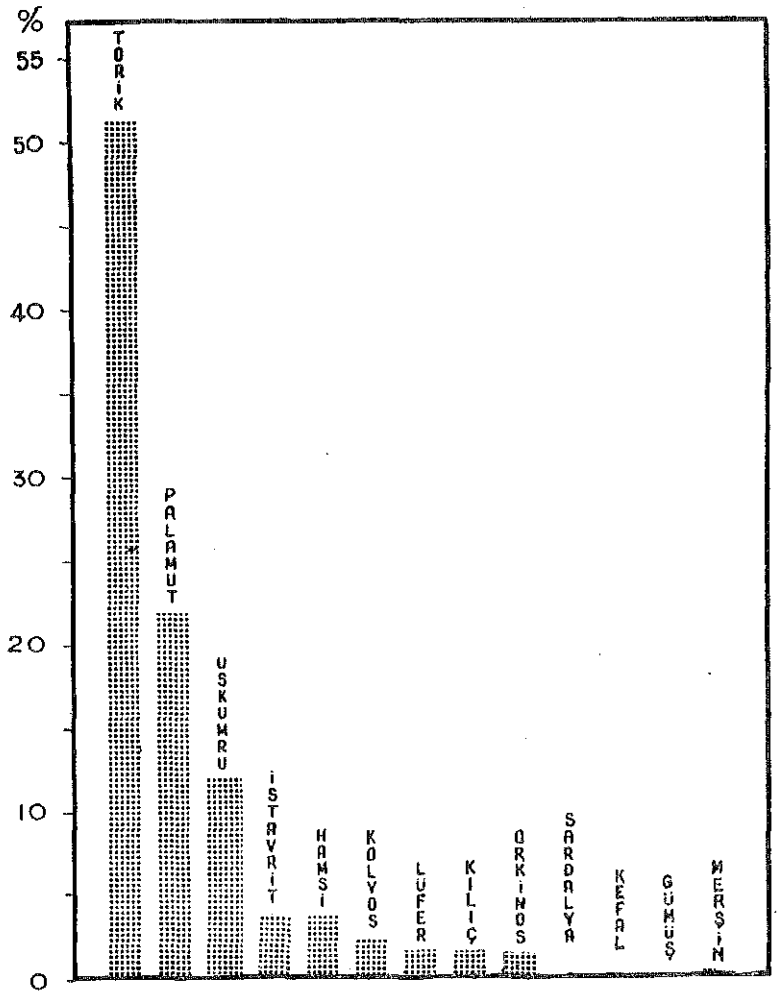
Kurumun önayak olduğu bu kalkınma harcketine Türk balıkçılarının da ayak uydurmakta olduğunu bir iftihar vesilesi olarak burada zikretmek icap eder. Son üç sene zarfında, pelâjik balıkçılığımızın en tesirli av vasıtası olan gırgırlarda yapılan değişiklikler Türk balıkçılığına yepyeni bir istikamet vermek istidadındadır. Zira evvelce kullanılan ve bugünün icaplarına uymaktan uzak bulunan çift kanca başlı gırgır takımlarının yerini bugün birçok modern memleketlerde olduğu gibi, mekanik teçhizatlı bir motor ile bir yardımcı kancabaşın alışı hem zaman hem de insan kuvvetinden tasarrufa yol açmış bulunmaktadır.

Eskiden kullanılan 27 kişilik gırgır takımları yerlerini bugün 10-11 kişilik takımlara bırakmışlardır. Bu yenilik hareketi 3 sene gibi nisbeten kısa bir zamanda hemen hemen bütün Türkiye balıkçılığına sirayet etmiştir. Bugün İstanbulda yeni tip gırgırlar %80 nisbetindedirler. Bu yeniliğe Kurumun getirtmiş olduğu modern teçhizatlı av gemilerinin bir misal teşkil ettiğini söylemeliyiz.

Pelâjik balıkçılıkta atılacak ikinci ve mühim adım halen bilinen av mevsimleri ve sahaları dışında av yapabilecek kapasitede "purse seine" tipi gırgırların ve gemilerin kullanılması olmalıdır. Ayrıca, ilk defa Balıkçılık Araştırma Merkezi tarafından tecrübe edilerek çok iyi neticeler alınan Orta Su Trawllerinin kullanılması da balıkçılık imkân ve istihsalâtını bir hayli arttıracaktır. Orta su trawl'ü dediğimiz ağlar denizin muhtelif derinliklerine ayarlanabilen ve bu suretle satıhtan dibe kadar bulunan her derinlikte av yapabilen pelâjik bir trawl tipidir. Bu aletin gerek tek gerekse çift gemiden kullanılmasının mümkün oluşu av kapasitesinin yüksekliği, maliyet ve işletme masraflarının azlığı göz önünde tutulacak olursa yakın zamanda bu ağın Türk balıkçılığında oynayacağı rolü tahmin etmek kabil olacaktır.

Memleketimizin en bellibaşlı pelâjik balıkları 1 no. lu Histogramda, total pelâjik balık istihsalindeki yüzde miktarları sırasına göre tasnif edilmişlerdir (Histogram — 1).

Son seneler zarfında toplamış olduğumuz istatistikî malûmata dayanarak pelâjik balıklarımızın mevsimsel tezahür grafikleri hazırlanmış bulunmaktadır. Pelâjik balıkçılığa hasredilmiş bulunan bu yazıda bu husustan da bahsetmek yerinde olacaktır.



Histogram 1 — İstanbul ve civarında tutulan pelâjik balıkların yıllık istihsal yüzdeleri.
(The annual percentage of each pelagic species relative to the total, landed in Istanbul.)

PALAMUT:

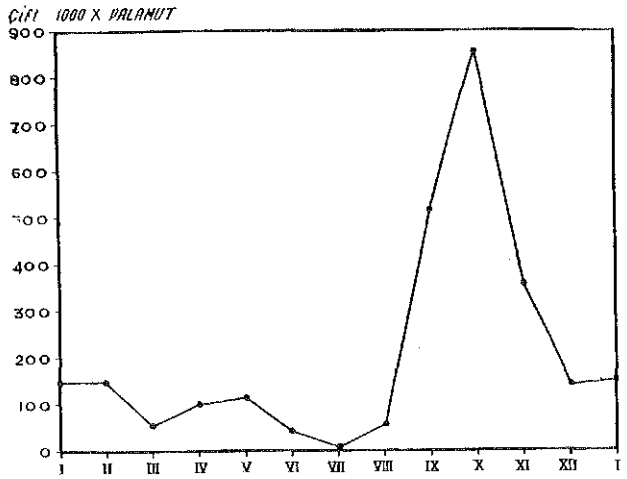
İlmî adı *Sarda sarda* olan palamutların muayyen bir boy uzunluğu ve vücut ağırlığı iktisap etmeleri ile torik adı aldıkları ve bunların ayrı

ayrı türler olmadıkları hepimizin malûmudur. Balıkçılarımız tarafından bu balığın muhtelif boylardaki fertlerine ayrı ayrı isimler verilmektedir. Ekseriyetle bu isim değişiklikleri bu fertlerin ayrı ayrı nevilere ait oldukları zehabını uyandırmakta ise de uzun zamandan beri yapılan araştırmaların kat'î neticesine dayanarak bu farklı isimli fertler arasında morfolojik bir farkın mevcut olmadığını söyliyebiliriz.

Aşağıdaki cetvelde *Sarda sarda*'nın muhtelif boylarına verilen isimler gösterilmektedir.

adı	Takribî boyu	Yaşı
Palamut vonozu	0—10 sm.	1— 2 aylık
Gaco	10—20 »	2— 4 »
Çingene palamutu	20—30 »	4— 6 »
Palamut	30—40 »	6—12 »
Kestane palamutu	40—45 »	12—14 »
Zindandelen	45—50 »	14—18 »
Torik	50—57 »	2 senelik
Sivri	57—63 » daha fazla	3 ve daha yukarı senelik

Palamutlar her sene yumurtlamak üzere Marmara ve Akdenize beslenmek için ise Karadenize hicret etmektedirler. Fakat son seneler zarfında palamutların zaman zaman Romanya sahillerinde yumurtladıkları gerek Romen gerekse Rus literatürlerinde zikredilmektedir. Araştırma merkezimiz tarafından yapılan Gonad - olgunluk dereceleri tâyini de bunu teyit etmektedir. Vaziyet böyle olmakla beraber, palamutları göççetmiye veya bu periyodik göçlerinden alıkoymaya zorlıyan bazı biyolojik ve hidrolojik faktörlerin mevcudiyeti de su götürmez bir hakikattir. Zaten Karadenizde



Şekil 2 — 34 senelik palamut istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of the small size *Sarda sarda* depending on statistical records of 34 years.)

yumurtlayan balıkların nisbeti Marmarada yumurtlayanlara nazaran bir hayli azdır.

İstanbul ve hattâ Türkiye sularında pelâjik balık avcılığı, işte bu göçler esnasında temayüz etmektedir. Boğaziçinden akmakta olan balık sürüleri Boğaz ve civarında külliyetli miktarlarda av vermektedirler.

Şekil — 2'de görüleceği gibi palamut avcılığı Ağustos ortalarına doğru çoğalmıya başlamaktadır. Eylûl ve Ekim esnasında birdenbire azamiye ulaşır. Ekim sonlarında tekrar azalmıya başlıyan avcılık Martta asgarî değere ulaşmaktadır. Palamut avcılığı her ne kadar bu grafikte gösterildiği şekilde tezahür ederse de, 1933 ve 1938 senleri birer istisna teşkil etmektedir. Bu seneler esnasında azamî değere Mayıs ve Şubatta erişilmiş olup bütün sene zarfında avcılık yapılabilmiş olması dolayısiyle 1955 senesi de istisna teşkil etmektedir.

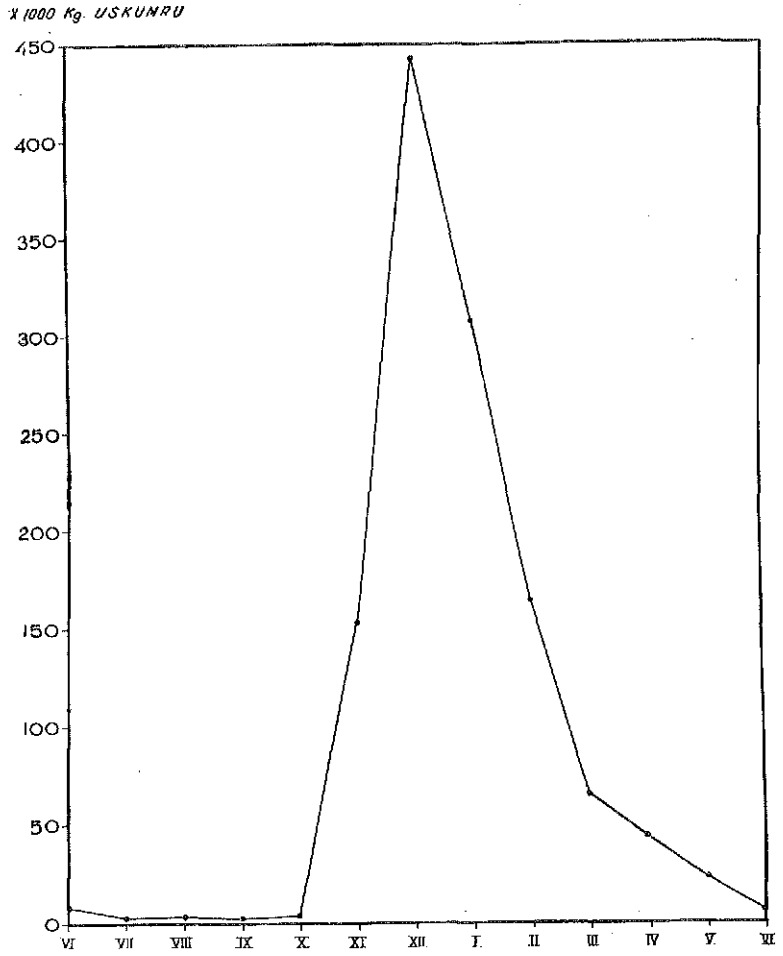
USKUMRU:

Uskumrular da tıpkı palamutlar gibi, muayyen mevsimlerde Boğazdan geçerek yumurtlamak üzere Marmara denizine ve beslenmek üzere tekrar Karadenize hicret etmektedirler. Yumurtasını dökmüş olan uskumru yağ muhteviyatının azlığı dolayısiyle çiroz adı almaktadır. Uskumrular kendilerine has biyolojik hususiyetleri dolayısiyle Marmara veya Egeye geçerek oralarda yumurtlamıya mecburdurlar. Zira stenobath olan uskumru yavruları gelişmeleri için 600 m. derinlikte sulara ihtiyaç göstermektedirler. Bilindiği veçhile Karadenizin 200 m. dan daha derin olan suları hidrojen sülfür ihtiva etmekte ve bu sebepten ötürü her türlü canlıya kapalı bulunmaktadır. Bu derinliklerden aşağılarda ancak anaerob birkaç bakteri yaşıyabilmektedir. İşte bu sebepler dolayısiyle uskumrular kış aylarında yumurtlamak üzere Marmaraya ve ilkbahar sonlarından yaz ortalarına kadar (çiroz) tekrar Karadenize geçmektedirler. 16 senelik istatistikî malûmata nazaran, uskumrular X. ayı mütcakip bol miktarda avlanmaya başlarlar. XII. ayda avcılık azamî değere ulaşır. VII. aydan X. aya kadar yaz ve sonbaharda uskumru avcılığı asgarî değerde hemen hemen sabit kalmaktadır (Şekil — 3).

İSTAVRİT:

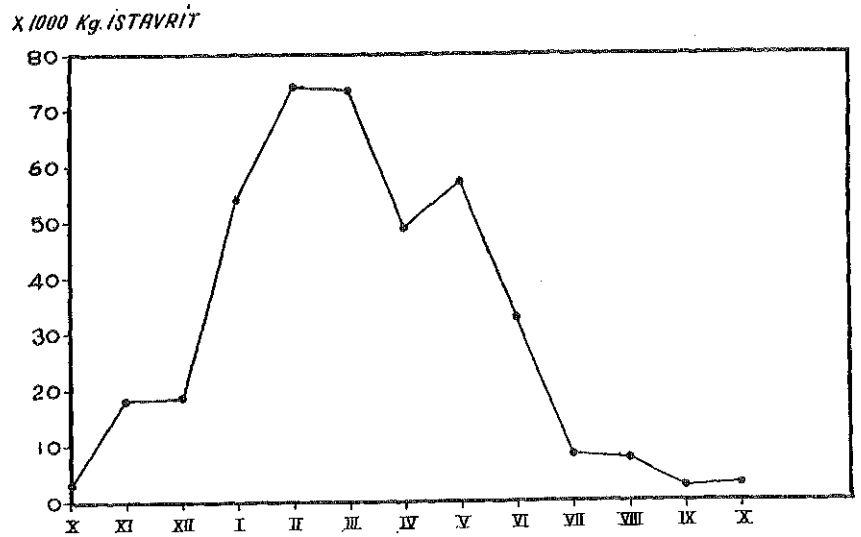
Türkiye sularında avlanmakta olan istavrit balıkları ayrı ayrı türlere ait olduklarından dolayı bunların biyolojik hususiyetleri de birdiğerinden farklıdır. Karadenizin bilhassa doğu bölgelerinde avlanmakta olan

ve Marmaranınkilere nazaran boyca çok büyük oluşları dolayısiyle iri istavrit adı verilen tür seneden sencye yayılış sahasını genişleterek 1954 de tektük, 1956 da nisbeten bol olarak Boğaziçinde de avlanmıya başlanmıştır. Türkiye sularında 15-20 seneden beri görülmeye başlıyan bu balık

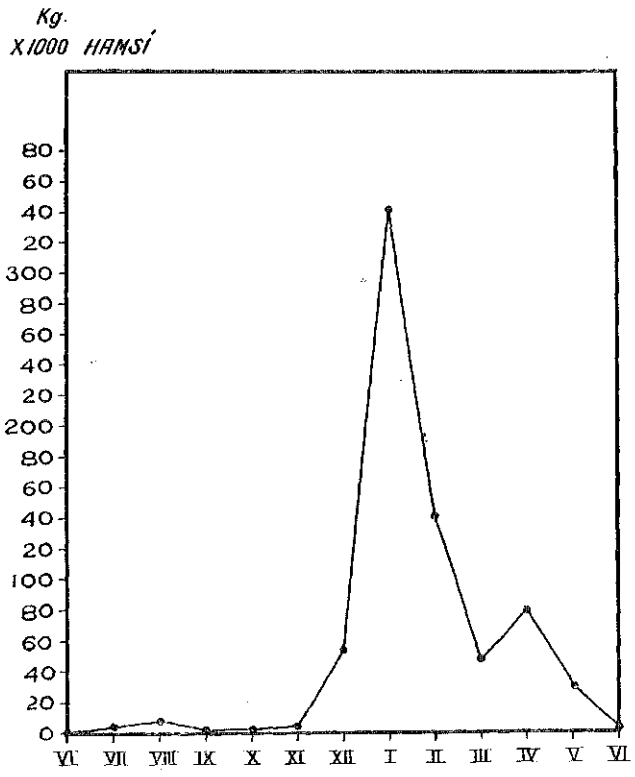


Şekil 3 — 22 senelik uskumru istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Scomber scomber* depending on statistical records of 22 years.)

pelâjik balıkçılığımız için çok şeyler va'detmektedir. Karadeniz istavriti hakkındaki istatistikî malûmatın natamam oluşu dolayısiyle biz burada yalnız İstanbul ve civarında avlanmakta olan Marmara istavritinin mev-



Şekil 4 — 32 senelik istavrit istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Trachurus* depending on statistical records of 32 years.)



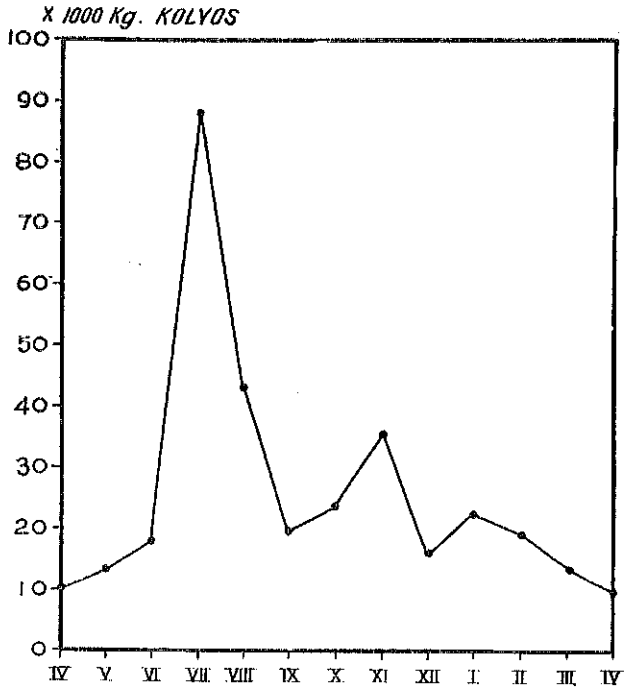
Şekil 5 — 28 senelik hamsi istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Engraulis encrasicholus* depending on statistical records of 28 years.)

simsel tezahürüne temas edebileceğiz. İstavritler, X. aydan itibaren VII. aya kadar av vermektedirler. I. ve II. aylar esnasında avcılık sabit ve azamî değerde kalmaktadır (Şekil — 4).

HAMSİ:

Bilindiği veçihle Karadenizde iki ayrı hamsi ırkı tefrik edilmektedir. Bu ırklardan birisi kerson veya Karadeniz hamsisi, diğeri ise, Azak hamsisidir .Hamsinin anavatanı Akdeniz olmakla beraber Kuzey denizi kıyıları ve bilhassa Karadenizde mühim rol oynar.

Hamsilerin yumurtlama mevsimi Mayıs, Haziran ve Temmuz başlarıdır. Hamsiler de uskumru veya palamutlar gibi göçler yapmaktadırlar. Azak hamsisi sonbaharda yumurtlama mahallini terkederek Kerç boğazından geçmek suretiyle Karadenize hicret etmektedir. Hamsiler kışı istirahat halinde, Kırım, Kafkasya ve Anadolu sahillerinde geçirirler. İlkbaharın gelişi ile beslenme faaliyeti de birdenbire artar. Hamsilerin yumurtlamak ve gıdalanmak üzere Azak denizine hicreti Nisan sonlarında başlar ve Temmuz iptidalarında nihayete erer. Hamsilerin Karadenize geçişlerine âmil Azak denizinde kışın hüküm sürmekte olan kötü suhunet şartlarıdır. Suhunetin +10° C ın altına düşüşü ile hamsiler Azağı terkederler ve bu esnada Kerç boğazında bol miktarda av verirler. Hamsiler kendilerine uygun kışlıyacak yerler ararken Türkiye sahillerine de elverişli suhunetteki su tabakalarını takiben gelirler ve bilhassa Fatsa, Ordu, Vona ve Giresun civarındaki langoz adı verilen çukurlarda kışlık istirahate çekilirler. Buralarda avcılık hamsilerin gidiş ve gelişleri esnasında çok canlanmaktadır.



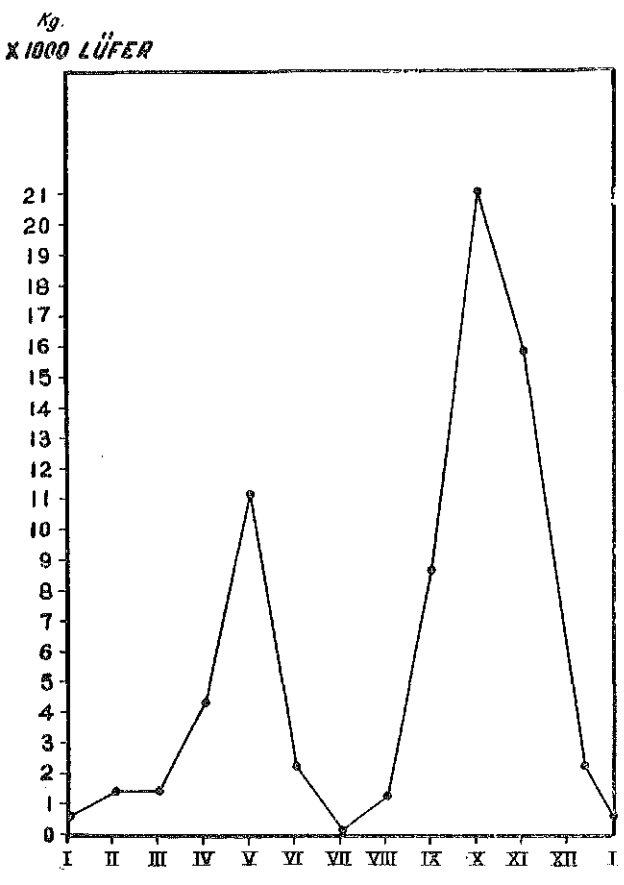
Şekil 6 — 18 senelik kolyos istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Pneumatophorus colias* depending on statistical records of 18 years.)

Karadeniz hamsisi adı verilen ikinci hamsi ırkı ise bütün hayatı boyunca Karadenizde kalır ve ancak mevzii göçler yapar. (Şekil — 5) de anlaşılacağı veçhile Hazirandan Kasım ayı iptidalarına kadar av veren hamsiler Azak denizine geçmeyip bütün seneyi Karadenizde (ufak bir populâsyon ise Marmarada) geçiren mahdut cesametteki hamsi sürüleridir. Türkiye sahillerinde hamsi avcılığı Azak'tan hicretin hemen akabinde birdenbire azamîye ulaşır. İlkbahar sonlarında (Haziranda) tekrar asga-

riye düşer. 16 senelik istatistiklerin neticesine nazaran Ocak ayı hamsi avcılığının azamîye ulaştığı ay olarak belirmektedir. Her ne kadar hamsi Karadenizin en ehemmiyetli balıklarından birisi ise de İstanbul ve civarı balıkçılığında hamsiler pelâjik balıkçılığın 4 üncü sırasını işgal etmektedirler (Bk. 1 no. lu histogram).

KOLYOS:

Kolyos balıkçılığı bilhassa Marmara, Saroz körfezi ve Ege denizinde yapılmaktadır. En tesirli tarzda kolyoz avcılığı büyük lüks lâmbaları yardımiyle dağınık bir tarzda bulunan sürülerin gece esnasında bir araya getirilmesi sayesinde olmaktadır. Kolyos avcılığı hemen hemen bütün diğer pelâjik balıklarımızın aksine olarak yaz ayları esnasında azamî değere ulaşmaktadır ve VI. aydan başlıyarak IX. ayda nihayete ermektedir. XI. ayda ikinci fakat birinciye nisbetle çok daha küçük olan bir av devresini müteakiben kolyoslar ilkbahara kadar ufak miktarlarda tutulmaktadırlar (Şekli — 6).



Şekil 7 — 31 senelik lüfer istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Temnodon saltator* depending on statistical records of 31 years.)

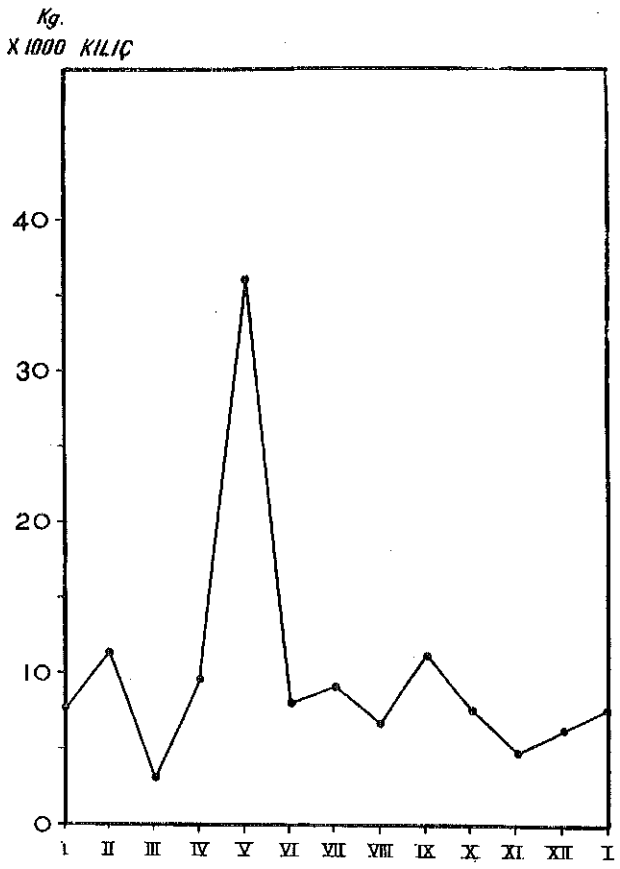
LÜFER:

Lüfer avcılığı sularımızda büyük bir istikbal va'detmekle beraber, halen amatör balıkçılığın sınırları içersinde kalmaktadır. Her ne kadar Boğaz içindeki sıra dalyanları ile Çekmece gölleri mansabında bulunan dalyanlar ve Marmara sahillerindeki manyat ve ırıplar nisbeten büyük miktarlarda lüfer avlamakta iseler de son seneler esnasında yapılan

tetkik seferlerinde sahillerimiz boyunca tesbit edilmiş olan lüfer sürülerine nisbetle bu avcılık dahi çok cüz'i sayılır. Lüferler alelâde palamut gırgırlarını dişleri ile tahrip ettiklerinden, bunlara kolay kolay yırtılmıyacak, sağlam ve nisbeten sık gözlü ağların kullanılması kanaatimizce uygun düşecektir. Ayrıca lüfer sürülerinin ekseriyetle 10-15 m. derinlikteki sularda dolaşmaları sebebiyle bunların bulundukları yerleri tesbite yarıyacak eko-iskandil aletleri ile mücehhez balıkçı teknelerinin kullanılması elzemdir. İstanbul ve civarında lüfer avcılığı senede iki sivriliş gösterir. (Şekil — 7) de görüldüğü gibi bunlardan biri ilkbahar avcılığıdır ki burada azamî değere Mayısta ulaşılmaktadır. İkinci lüfer avcılığı devresi birincisinden daha kuvvetli olup Ekimde azamî değeri bulmaktadır. Sonbahar devresinde avlanan balıklar ilkbahardakilere nazaran yağ ve lezzet bakımından çok daha kıymetlidirler. Lüfer avcılığının asgarî değeri Temmuz ayına tesadüf etmektedir.

KILIÇ:

Kılıç balıkları stenohalin formlar olduklarından Karadenizin düşük tuzluluktaki sularına ancak çok nadir hallerde geçerler. Kılıç balıkçılığı bilhassa Marmara denizinde Mayıs ve Haziran ayları esnasında zıpkıncılık suretiyle yapılmaktadır. Kılıçlar bu mevsimde satıh sularında yattıklarından avlanmaları çok kolaylaşmakta d ı r . Ayrıca ağlar vasıtası ile karanlık gecelerden istifade edilerek veya paraketalar va-



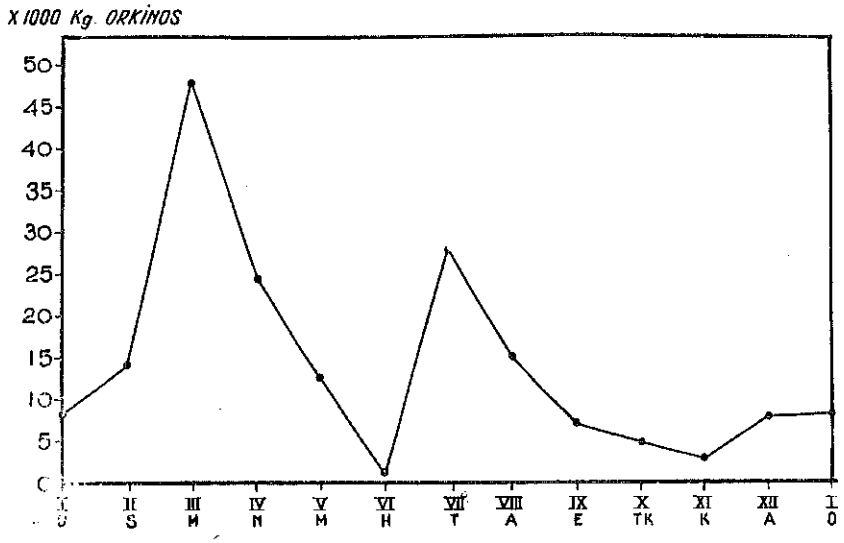
Şekil 8 — 32 senelik kılıç istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Xiphias gladius* depending on statistical records of 32 years.)

sıtasiyle avlanmaktadırlar. Dalyanlar vasıtasiyle yapılan avcılık çok cüz'idir.

(Şekil — 8) de İstanbul Boğazı ve Marmara denizinden avlanan kılıç balıklarının mevsimsel tezahürü görülmektedir. Kılıç avcılığı III. ayda asgarî değerdedir, Mayısta birdenbire büyük bir artış gösterir ve tekrar bütün sene zarfında aşağı yukarı sabit kalan bir değere iner. Mayıstaki artışın sebebi Marmarada yapılan zıpkıncılık faaliyetidir.

ORKİNOS:

Orkinozların İstanbul ve civarında en fazla av verdikleri mevsim (17 senelik istatistiklere nazaran) Mart ayıdır. Ekimden itibaren Karadeniz-



Şekli 9 — 29 senelik orkinos istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Thunnus thynnus* depending on statistical records of 29 years.)

den başlıyan pelâjik balıklar akınına bağlı olarak orkinoslar da Karadenizden Marmaraya göçederler. Bu akın Nisan sonlarında nihayete erince, orkinos avcılığı da Nisan, Mayıs ve Haziran devresinde asgarî değere iner. Bu sebepten dolayı Marmaraya ilk geçen orkinoslarda daha Nisan başlarından itibaren karadenize geri hicrete başlarlar. Haziran sonlarına doğru bu geriye dönen orkinoslar balıkçılığın tekrar canlanmasını temin etmektedirler. Temmuzda ikinci fakat Marttakine nazaran daha az bir sivriliş kaydedilmektedir. Bu esnada orkinoslar Boğaziçindeki dalyanlarda avlanmaktadırlar. Haziranda Karadenize geçmekte olan orkinosların kısmı azamîsinin cinsî olgunluğun son safhalarında oluşları bunların Karadenizde yumurtladıklarına ait malûmatı destekler mahiyettedir (Şekil — 9).

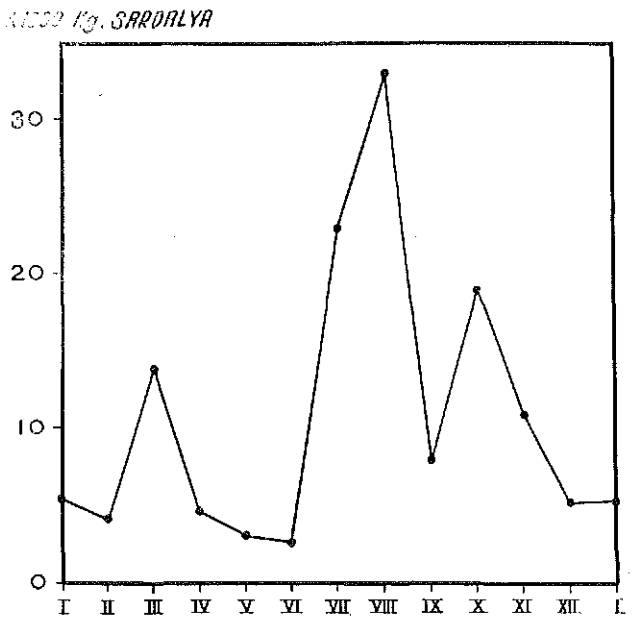
Yukarda vermiş olduğumuz grafik Türkiye sularının esas orkinos nev'i *Thunnus thynnus*'a aittir. Bu neviden başka gene memleketimiz denizlerinde yaşıyan fakat *Thunnus*'lar gibi muntazam hicretler yapmıyan ve avcılık bakımından büyük bir ehemmiyet arzetmiyen bir kaç orkinos nev'i daha mevcuttur. Bunlar sırasiyle:

Germo alalunga (GML.)	Yazılı orkinos
Euthynnus alliteratus (RAF.)	Akdeniz orkinosu
Neothunnus albacora	Türkçe adı yok
Parathunnus obesus (LÖWE)	» » »

adlı orkinos balıklarıdır.

SARDALYA:

Orkinoslarda olduğu gibi memleketimizde sardalya adı altında mütalâa edilen bir sürü balık nevi bulunmaktadır. Aynı familyaya ait olan tirsi ve ringa balıklarına da zaman zaman sardalya adı verilmektedir. Biz burada yalnız *Sardina pilhardus* WALB ile meşgul olacağız. Zira Karadenizin, bilhassa ordu ve civarının kıymetli balıkları olan tirsiler hakkında hiç bir istatistikî malûmat elimizde mevcut değildir. Hattâ tirsi adı altında kaç ayrı nevi balığın toplanmış olduğu dahi aydınlatılmıya muhtaç meselelerdendir. *Sardina pilchardus*'un yani hakikî sardalya balığının balıkçılığı üç devreye ayrılarak mütalâa edilebilecektir. Bunlardan birincisi Mart balıkçılığı, ikincisi Ağustos balıkçılığı, üçüncü devre ise Ekim balıkçılığıdır. Bu üç devreden en tesirli olanı (Şekil 10) da görülebileceği gibi Ağustos balıkçılığıdır. Bunu ehemmiyet sırasına göre Ekim ve Mart devreleri takip etmektedir. Sardalya İstanbul ve civarı balıkçılığında önemsiz bir rol oynamakla beraber

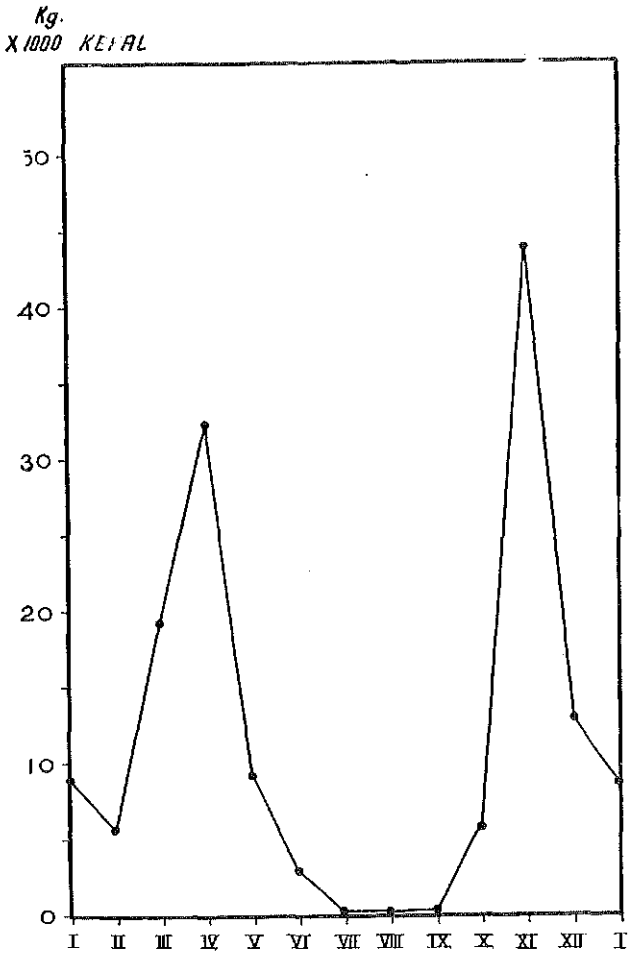


Şekil 10 — 33 senelik sardalya istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Sardina pilchardus* depending on statistical records of 33 years.)

Gelibolu-Saroz bölgesi için en önemli pelâjik balıklardan birisidir. Çanakkale, Gelibolu ve Marmara adalarındaki balık konserve sanayii sardalya balıkçılığı üzerinde temerküz etmektedir.

KEFAL:

Kefal balıkçılığı İstanbul civarında ancak Küçükçekmece ve Büyükçekmece göllerinin mansabındaki dalyanlarda intensif bir şekilde yapılabilmektedir. Kefal avcılığı da iki devrede mütalâa edilebilir (Şekil — 11).



Şekil 11 — 7 senelik kefal istatistiklerine göre mevsimsel tezahür.
(Seasonal occurrence of *Mugil sp.* depending on statistical records of 7 years.)

Birinci devrenin azamisi Nisanda, ikinci devreninki ise Kasımdadır. Bu ikinci devrede kefal avcılığı senelik azamî değerine ulaşmaktadır.

Türkiye sularında kefal adı altında tanınan bir sürü balık bulunmakta ve istatistiklerde aynı ad altında mütalâa edilmektedirler. Aşağıdaki listede muhtelif kefalların ilmî ve popüler isimleri verilmektedir.

Mugil cephalus (LINN.)	Haskefal
Mugil auratus (RISS.)	Altınbaş kefal
Mugil ramada (RISS.)	Pulatarina
Mugil saliens (RISS.)	Türkçe adı bilinmiyor
Mugil seheli (FORSK.)	» » »
Mugil chelo (CUV.)	» » »

GÜMÜŞ ve MERSİN:

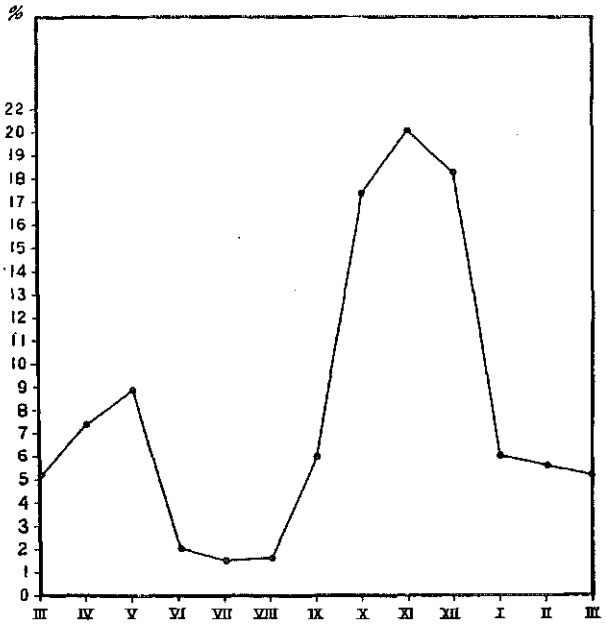
1 no. lu histogramda da görülebileceği veçhile halihazırda gümüş ve mersin balıkçılığı İstanbul ve civarında ve hattâ bütün Türkiye sahillerinde mühim bir rol oynamamaktadır. Bu sebepten dolayı bu balıklara ait mevsimsel tezahür grafiklerini dercetmekten sarfınazar edilmiştir. Bununla beraber Kızılırmak ve Yeşilırmak'ın mansabında mersinlerden elde edilen kıymetli havyarların balıkçılık iktisadiyatımızdaki yerleri mühimdir. Karadenizde yaşıyan mersin balıklarının listesi aşağıda verilmiştir:

Huso huso	Mersin morinası
Acipenser stellatus	Mersin balığı
Acipenser nudiventris	Şıp balığı
Acipenser ruthenus	Çuka balığı
Acipenser güldenstaetti	Karaca balığı
Acipenser sturio	Kolan balığı

Gümüş balıkçılığı da istatistikî malûmat toplama bakımından büyük zorluklar arzetmektedir, zira gümüş namı altında satılan 8 ayrı nevi balık bulunmaktadır. Gümüş balıkçılığı bugün için iktisadî kıymet bakımından çok cüz'î bir değer taşımakta ise de Karadenizde yapmış olduğumuz tetkik seferleri esnasında bilhassa Amasra civarında tesbit edilen gümüş sürüleri ilerisi için bir çok ümitler vermektedir. Aşağıdaki listede muhtelif gümüş balıkları gösterilmektedir:

Atherina hepsetus (LINN.)	Çamuka balığı
Atherina boyeri (RISS.)	Gümüş balığı
Atherina prebister (CUV.)	» »
Atherina forskali (RÜPP.)	» »
Atherina pinguis (LACEP.)	» »
Atherina mochon (CUV. VAL.)	» »
Atherina pontica (EICHW)	» »
Atherina bonapartii (BOULEN.)	» »

Yukardaki bölümlerde pelâjik balık türlerini teker teker incelemiş bulunuyoruz. Şayet İstanbul ve civarı pelâjik balıkçılığına topyekûn bir nazar atfedecek olursak esas balıkçılığın Kasım ayında azamiye ulaştığını görürüz (Şekil — 12) tetkik edildiği takdirde pelâjik balıkçılığın bir sene içersinde iki devre gösterdiği anlaşılabilecektir. Bunlardan birisi ilkbahar, diğeri ise sonbahar devresidir. Temmuz başından Ağustos nihayetine kadar pelâjik balıkçılık bir sükûnet devresi geçirmekte, aynı tarzda ikinci bir sükûnet devresi de Ocaktan Mart sonuna kadar hüküm sürmektedir.



Şekil 12 — İstanbul ve civarında total pelâjik balıkçılığın aylara düşen yüzde miktarları.
(Seasonal occurrence of the pelagic fishes around Istanbul as a persentage of the total landings.)

(Şekil — 12), pelâjik balıkçılığın aylara düşen yüzde miktarını vermektedir.

A Brief Review Of the Turkish Cannig Industry

NURİ KILIÇ, M. S. M. E.

Turkey has the basic requirements for a profitable canning industry as fish, fruits and vegetables are available in good quality and substantial quantity. At the present time the turkish canning industry comprises 46 factories of various sizes with capacities ranging from 50,000 to 3,000,000 cans per year. The annual output of the industry is expected to be about 30 million cans of different sizes, this year. Most of these plants are in the Marmara region where the supply of the raw materials, such as fish, fruits and vegetables is abundant and the consumption of canned goods is greater than elsewhere in the country. The rest of the factories are located in İzmir and in a few towns on the Black Sea coast.

Because of the generous sea and the favourable climate, the variety of raw materials and consequently the kinds of canned food in Turkey are great. The main products are as follows:

FISH: Sardines, mackerel, horse mackerel, bonito, tuna.

FRUITS: Peaches, apricots, apples, plums, pears, cherries, strawberries, oranges.

VEGETABLES: Peas, beans, string beans, brood beans, tomatoes, egg-plants, ocra, green pepper, mushrooms.

Contrary to West European and American practices, the turkish canners at present manufacture their own cans. This is mainly because there is no large can-making plant in the country that could supply the canners with ready-made cans of adequate quality and at reasonable cost. Unfortunately this divides the canners' interest between can-making and canning.

The equipment used for canning varies according to the capacity and the age of the plant. In general the smaller factories are equipped with simple machines and the larger ones operate with modern equipment.

In Turkey problems of food preservation are chiefly the concern of the Meat and Fish Office. Since canning is one method for preserving food, the Office has included among its activities the development of the existing industry and has offered to the canners all possible cooperation and assistance. At present the auxiliary materials such as tin and tin plate are being imported and distributed to the canners by the Office. The Office and the canners have been fortunate to have the U. N. Technical Assistance expert Dr. H. N. MOE working in Turkey to give advice on the problems of the industry. In general, all the essential requirements are these for the turkish canning industry to become an exporting venture, but certain changes are necessary. Since the quality control of products is the prime factor in canning, the Meat and Fish Office has decided to establish a pilot plant and a quality control laboratory to work on fish canning in Beşiktaş. A similar one for fruits and vegetables is already working at Ege University in Izmir and the Ministry of Agriculture plans to erect another in Bursa.

Furthermore, to supply the canners with ready-made cans, the Office is considering the possibility of erecting a central can-making plant. It is hoped that through this factory not only could proper quality and reasonable cost be maintained in can-making, but also the standardization of can sizes, which have already been determined by the Turkish Standards Institute could be effected. The effort expended in this fied, would we believe, result in the near future in high, better and cheaper production by the Turkish canning industry.

Columbia Üniversitesi ile Balıkçılık Araştırma Merkezimiz Arasında İşbirliğine Doğru

Dr. HÜSEYİN PEKTAŞ

Amerikanın en tanınmış üniversitelerinden biri olan Columbia Üniversitesinin New York şehri civarında bir "Jeolojik Rasathanesi" vardır. Rasathane isminin de ortaya koyduğu gibi bu müessese, arz kabuğunun teşekkülü, bünyesi, hususiyetleri ve gösterdiği anomalileri gözetliyerek ve etüd ederek neticelere ulaşmağa çalışmakta ve bu sahada büyük muvaffakıyetlere erişmiş bulunmaktadır. Arz kabuğunun büyük bir kısmının okyanuslarla örtülü olması dolayısiyle adı geçen müessese faaliyetleri-

nin, bilhassa denizlerde konsantre olması gayet tabiidir. Filhakika mezkûr müessese ait ve direğinde Columbia Üniversitesi forsunu dalgalandıran VEMA isimli araştırma gemisi şimdiye kadar Atlantik Okyanusu, Arktik Okyanusu gibi bölgeleri yukarıda izah edilen maksatlarla ziyaret etmiş ve arz kabuğuna ait bilgiler toplamıştır. Bu yıl sıra Akdeniz ve bilhassa bu iç denizin Ege bölgesine gelmişti.

Haziran sonlarına doğru profesör Dr. EWING idaresindeki bir ilmî heyetle Amerikadan hareket eden VEMA, araştırma yapa yapa bölgemize kadar gelmiş ve İzmir Milletvekili Doçent NURİYE PINAR'ın yaptığı organizasyon sayesinde 2 ağustos 1956 günü Et ve Balık Kurumunun balıkçılık araştırma işlerinde kullanılan "Arar" gemisi ile İzmir'de buluşmuştur. VEMA'nın Akdeniz seferi evvelki seferlere nispetle bazı hususiyetler göstermektedir ki, bunlardan bir tanesi, paleoantropolojik konularla meşgul bulunan 9 kadar Avrupalı ilim adamını Napoli'den İzmir'e kadar getirip İzmir ile Antalya arasındaki sahil bölgesinde "Arar"la kendi konulariyle ilgili araştırma yapmalarına fırsat vermesidir. VEMA'nın memleketimize ulaştırdığı ilim adamları NURİYE PINAR başkanlığındaki Türk ilim heyeti ile birlikte sahil mağaralarında etüdler yapmışlar ve VEMA ile ikinci buluşma yeri olan Antalya'ya kadar gitmişlerdir. Buna mukabil İzmir'den açık denize doğru açılan VEMA, kara ile alâkasını keserek 11 gün denizlerde çalıştıktan sonra buluşma limanına yani Antalya'ya ulaşmıştır.

Yazının muharriri İzmir'de "Arar"dan ayrılarak VEMA'ya geçmiş ve 11 günlük Ege - Doğu Akdeniz ilmî çalışmalarında VEMA İlim Heyeti ile işbirliği yapmıştır. Tevazu hudutlarını hiç de aşmadan, bu işbirliğinin Balıkçılık Araştırma Merkezimiz ve netice itibariyle memleketimiz için övünülecek neticeler verdiğini söyliyebiliriz. VEMA'ya geçip Dr. EWING ile içinde bulunduğumuz bölgenin hususiyetleri üzerinde müzakerelere başladıktan sonra, aramızda müşterek bir program hazırlıyarak bu bölgede balıkçılığımızla alâkalı oşinografik bazı etüdler yapmağa karar verildi. Bu kararın bir neticesi olarak Ege ile Doğu Akdeniz baseni arasındaki su alış verişini etüd maksadiyle mezkûr iki denizi birbirine bağlıyan Caso ve Scarpento boğazlarında müştereken oşinografik etüdler yapıldı ve su numuneleri alındı. Anadolu ile Rodos arasındaki üçüncü geçidin etüdü "Arar"a ve Yunanistan ile Girit adası arasındaki geçidin etüdü ise dönüş esnasında tetkik edilmek üzere VEMA'ya ayrılmıştı. Bu her iki geçidin saha etüdleri de bugün ikmal edilmiş durumdadır.

Yapılan anlaşma gereğince VEMA gemisi tarafından alınan bütün su numuneleri Istanbul'da Balıkçılık Araştırma Merkezinde tahlil edilecek ve neticeler iki müessese arasında müştereken kıymetlendirilecektir. VEMA'nın dönüş yolu üzerinde yapacağı araştırmalarda alınacak su numuneleri de tahlil için Napoli'den Araştırma Merkezimize gönderilecektir.

Bu konudan başka bölgemizi ilgilendiren diğer her türlü araştırmalar da Balıkçılık Araştırma Merkezimiz, Columbia Üniversitesi ile mutabık kalınacak olan saha çalışmalarını yapacak ve bu işlerin yapılabilmesi için Amerikalı dostlarımız bizi gerekli modern alet ve cihazlarla takviye edeceklerdir. Daha şimdiden müştereken etüd edilebilecek muhtelif konular üzerinde mutabık kalınmış ve iki müessese eşit haklarla bir işbirliği yapmayı uygun bulmuşlardır. Burada **"eşit haklarla"** ibaresini tekrarlamayı bir vazife biliyorum. Zira Amerikan İlim Heyeti Başkanı Dr. EWING ile bu konuyu müzakere ederken "Biz sizin bu bölgedeki bir ön istasyonunuz gibi vazife görüp küçük kardeşiniz gibi telâkki edilerek malzeme bakımından desteklenmemizi" istediğim zaman Dr. EWING aynen "eşit haklarla ortak" ibaresini bizzat kullanmıştır.

İlim sahasına henüz intikal etmiş veya edecek olan birçok yeni cihaz ve aletlerin Araştırma Merkezimize kadar ulaşması bu yolla mümkün olabilecek ve bu işbirliğinden şüphesiz ki her iki taraf da istikbalde büyük faydalar sağlıyacaktır.

Türk Sularında Deniz Araştırmalarının Kronolojisi

1681 — Boğaziçinde MARSİLİ tarafından yapılan ilk hidrolojik araştırma.

1842 — F. GÖBEL Karadeniz'in ilk kimyasal incelemesini yapıyor.

1852 — CHR. GASSHAGEN'in Karadeniz sahilinde hidrolojik incelemeleri.

1871 — Kaptan SPRATT tarafından akıntılar üzerinde tecrübeler.

1872 — WHARTON, Boğaziçinde ters alt akıntının mevcudiyetini ispat etti.

1881 — MAKAROFF, akıntı, temperatür ve yoğunluk tecrübeleri yaptı.

1884 — MAGNAGHİ, Çanakkale ve Karadeniz Boğazlarının akıntıları üzerinde tecrübeler yaptı.

1886 — A. DE GUEYDAN İstanbul civarında temperatür ve kesafet tâyinleri yaptı.

1890 — J. B. SPINDLER, WRANGEL, AUDRUSSOFF, LEBENDİNZEFF, ve OSTROUMOFF'un iştiraki ile yapılan ilk Karadeniz ekspedisyonu. (H_2S gazının bulunuşu).

1891 — II nci Karadeniz ekspedisyonu ve KOLOTOFF'un tetkikleri.
1892 — WOLF ve LUTSCH "S.M.POLA" gemisinde Çanakkale Boğazının etüdü.
1894 — NATTERER "Taurus" gemisinde Marmarada yaptığı ilk O_2 ve CO_2 çalışmaları.
1894 — SPINDLER ve WRANGEL "Selânik" gemisinde Marmara denizi haritasının tamamlanması.
1910 — "Thor-ekspedisyonu".
1914 — KARAKİN DEVECİYAN'ın "Balık ve Balıkçılık" kitabı.
1916 — Dr. WIKTOR BANER'in Türkiyede ilk balıkçılık araştırma şubesine şef olarak tâyini.
1917 — ALFRED MERZ ve AHMET RASİM'in akıntı tecrübeleri.
1918 — EHRENBAUM'un Osmanlı sularında Deniz Balıkçılığı adlı etüdü.
1919 — W. PENCK Boğaziçinin jeolojisini inceledi.
1933 — İlk Baltalimanı Balıkçılık enstitüsü teşebbüsü.
1937 — Bu ilk balıkçılık enstitüsünün kapanışı.
1942 — Baltalimanındaki Zoologi Enstitüsüne merbut laboratuvarın faaliyete geçirilmesi.
1947 — İktisat Vekâleti tarafından balıkçılık sahasında İst. Universitesi Zooloji Enstitüsü ile teşriki mesaiye başlayışı.
1950 — Toprak Mahsulleri Ofisi ile Fen Fakültesi arasında işbirliği ve Baltalimanı laboratuvarının genişletilmesi.
1951 — Araştırma teknelerinin gelmesi: Gezer, Görür, Bulur.
1952 — Hidrobioloji Araştırma Enstitüsünün kuruluşu.
1952 — Arar gemisinin gelişi.
1953 — F. A. O.'nun Balıkçılık kursunun açılışı.
1954 — Balıkçılık Araştırma Merkezinin açılışı.
1954 — Türkiye Akdeniz Araştırmaları Monaco toplantısına iştirak ediyor ve âza oluyor.

Chronology Of Marine Research In Turkish Waters

1681 — MARSILI's first hydrographic research in the Bosphorus.
1842 — GÖBEL's first survey of the Black Sea.
1852 — GASSHAGEN investigates the Black Sea.
1871 — Kaptain SPRATT measures the currents in the Bosphorus.
1872 — WHARTON shows counter-current in the Bosphorus.
1881 — Measurements of temperatures, currents and salinities by MAKAROFF.

1884 — MAGNAGHI investigates the currents in the Dardanelles and the Bosphorus.

1886 — A. DE GUEYDAN first demonstrates the boundary between the two currents by measuring their depths.

1890 — The existance of H_2S in the deeps of the Black Sea is shown by the first Black Sea expedition with SPINDLER, AUDRUSSOFF, LEBENDINZEEF, and OSTROUMOFF participating.

1891 — KOLOTOFF leads the second Black Sea expedition.

1892 — "S.M.Pola" used by WOLF and LUTSCH for studying the Dardanelles.

1894 — O_2 and CO_2 determination by NATTERER on the "Taurus".

1894 — Chart of the Sea of Marmara is completed by SPINDLER and WRANGEL on the "Selânik".

1910 — "Thor" expedition.

1914 — K. DEVECİYAN's book, "Fish and Fisheries in Turkey".

1916 — Dr. W. BANER's nomination as chief of the Turkish Fisheries Department.

1917 — A. MERZ and A. RASİM study the currents in the Bosphorus.

1918 — EHRENBAUM's study of the fisheries in the waters of the Ottoman Empire.

1919 — W. PENCK investigates the geology of the Bosphorus region.

1933 — A marine laboratory is opened in Baltaliman.

1937 — This laboratory is closed.

1942 — A marine laboratory of the zoology department of Istanbul University is opened in Baltaliman.

1947 — Collaboration initiated between the Ministry of Commerce and the Zoology Department in fisheries problems.

1950 — The Office of Turkish Soil Products collaborates with the Faculty of Science to the Baltaliman Laboratory.

1951 — Three research vessels "Gezer" for Trabzon, "Görür" for Iskenderun, later Çanakkale and "Bulur" for Istanbul loaned by the Meat and Fish Office.

1952 — Establishment of the Hydrobiological Research Institute of Istanbul University in Baltaliman.

1952 — The research vessel "Arar" arrives.

1953 — Training Center for Fisheries Biology in Istanbul arranged by FAO.

1954 — Establishment of the Fisheries Research Center by M.F.O. in Beşiktaş.

1954 — The Turkish Republic is represented as a member at Monaco session of the General Fisheries Council for the Mediterranean.

Fisheries Research In Turkey

(Türkiye'de Balıkçılık Araştırmaları)

OLAV AASEN
(Fisheries Directorate, Bergen*)
SİDNEY HOLT
(FAO, Rome)

HÜLÂSA:

F. A. O. tarafından memleketimize gönderilmiş bulunan Norveçli uzman OLAV AASEN, iktisadî ehemmiyeti haiz olan balıklar üzerinde yapılmış olan araştırmalara ait raporların bir hülâsasını SYDNEY HOLT ile birlikte yapmaktadır. Uzman, 1954 ten ayrılış tarihi olan 1956 baharına kadar Karadeniz ve Marmarada yapılan rutin araştırmalardan başka trawl ve orta su trawl'lariyle yapılan denemelerden alınan neticeleri ve buna ait mülâhazaları serdetmektedir.

***

I. INTRODUCTION

A keen fisherman tries to know as much as possible about the basis to his work; to him everything about the fish is interesting. Knowledge helps him to understand and outwit his prey, so instinctively he sets about studying the behaviour of the fish, its occurrence on the fishing grounds, its spawning habits, and so on. He also tries to relate these observations with physical phenomena: currents, tides, wind, and waves. This is the seed of fisheries research, which is, fundamentally, only an extension of the fisherman's studies by scientifically trained men, using better and more varied equipment.

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* Mr. AASEN was at the time of writing (May 1956) employed temporarily by FAO as a Fisheries Biologist under the Expanded Technical Assistance Program.

The purpose of this paper is to introduce a new series of publications on marine fisheries research in Turkey. This enterprise is the result of a joint effort by the Meat and Fish Office (Et ve Balık Kurumu) of the Turkish Ministry of Commerce and the Food and Agriculture Organization of the United Nations.

Technical Assistance activity in Turkey dates back to July 1951 when Mr. R. H. FIEDLER of FAO Fisheries Division made, at the Government's invitation, a reconnaissance survey of the country's fisheries, and helped to draft the formal request for assistance. The basic agreement between FAO and the Turkish Government was signed on 29th February 1952, and a number of subsequent supplementary agreements provided for experts to be supplied in various fields, amongst others also a fishery biologist. This expert was provided under the Expanded Technical Assistance Programme (ETAP) and the scientist appointed was Dr. G. A. ROUNSEFELL from the United States, a research worker with a distinguished professional reputation.

Dr. ROUNSEFELL arrived in Turkey in Fabruary 1953 and left one year later. His technical instructions were, briefly, to make a quick appraisal of the general situation, to plan a short term programme of work, and to consider a long-range research programme in the field of Fishery biology. Dr. ROUNSEFELL's recommendations formed the basis for his successor's technical instructions. The main points of these were as follows:

"To formulate and implement a fishery biological research pro-"gramme aimed at increasing fish production through exploratory fi-"shery surveys, and to establish the limits of distribution and abundance "of dominant species of fish and to determine their behaviour as it af-"fects exploitation; and to train Turkish fishery biologists in the work". Mr. OLAV AASEN was assigned to carry through this stage of the plan, and worked in Turkey to this end from June 1954 until May 1956.

The practical man needs a philosophy as a general guide for his actions. We venture therefore to introduce this report with some observations on the philosophy of the Technical Assistance Programme. We must begin with a reference to the "fourth freedom" in the context of current world affairs. Our times are characterized by much violence, and although wars are forcing grounds for ideas and thus bring good out of evil, it cannot be held that even in this aspect wars are good in themselves. It would be difficult to show that freedom from want would itself eliminate the risk of wars, and it is not by an appeal to this doubtful possibility that we justify the freedom from want. Yet, even on this

possibility, the campaign to free peoples from want would be justified. Although we may believe that the Atlantic Charter was virtually forced into existence by the turbulence of the times in which it was created, we can be confident that the Charter as a whole, and Article 4 in particular, have their best meaning in times of peace and must contribute to reducing those tensions which lead to war.

The Technical Assistance Programme, which is helping to realize the freedom from want, may thus be regarded as a programme for times of peace and for the maintenance of peace, and we believe that it was with this conception that LORD (then Sir JOHN) BOYD ORR formulated the initial action programmes of FAO. It is significant, as indicative of the international recognition which LORD BOYD ORR's ideas immediately won, that for his work he was awarded the Nobel Peace Prize by the Swedish Government in 1949. This recognition was not merely a matter of newspaper columns and medals but also of the adoption of ideas generally. Ideas in themselves are not enough however. They must be translated into habits of mind and into courses of action, and we believe that the Technical Assistance Programme is one of the most effective means of making this translation possible. We are grateful for the opportunity which the Programme has given us to make our contribution in this crusade.

The ideas implicit in the statement of the "fourth freedom" are manifold, reaching far beyond the simple conception that people should not starve. The realization of this freedom means that resources must be found, must be rationally exploited and their products effectively and efficiently distributed for human use. This calls for much technical work, and at the basis of it there must be accurate technical knowledge of the resources themselves and of the methods by which they are to be investigated and exploited. In this the scientist has the primary rôle. It has not always been that scientists have enjoyed the full confidence of their fellow men and that trust has been placed in them commensurate with the tasks which they were competent to undertake. In truth, it cannot be said that this situation of the scientists, which we regard as a desirable one, exists universally today. We believe that it is part of the task of the scientist, as Technical Assistance expert, to win that confidence and to prove, by his performance, that he is worthy of confidence and can carry the trusts which may be placed in him.

It is true that in many modern states, administrators rely more and more on the scientist to lead the way in the approach to difficult problems. In Turkey there is a willingness to rely upon the scientific workers taking the lead in discovering and measuring resources and in

indicating how the development programme should be formulated and realized. During this project, there has developed in a small way that climate of intelligent scientific enquiry which, once created, rarely passes out of existence, and without which scientific institutions become barren and fruitless. We believe that this climate will persist and that the Turkish research workers will take their just place at international fishery councils.

A decisive step in the progress of fisheries research in Turkey was taken in August 1954, when the Director-General of Et ve Balık Kurumu, Mr. EKREM BARLAS, decided to establish research laboratories, and asked that plans be drawn up with future needs in mind. The outcome was a plan for a Fishery Research Center (Fig. I) with laboratories not only for fisheries biology but also for work in such closely related fields as hydrography, planktology, statistical investigations, and experimental fishing. Separate storage rooms for samples and equipment are attached to the laboratories. There are also laboratories for photography and for fish sampling. Space has been allowed for the gradual formation of a fishery museum (corridor-see Fig. I), and for library facilities. An administrative section regulates and co-ordinates the activities of the Center.

The laboratories have a restricted but adequate supply of the equipment necessary for the usual investigations. Attached to the Center is a fair sized research vessel, the R/S "Arar", which is equipped with most of the items now considered essential for fishery research. Further efforts, however, are needed to bring the standard of the ship up to date.

The Research Center was officially opened on 11 May 1955, the ceremony being attended by the Lord Mayor of Istanbul, representatives from FAO, the International Council for the Exploration of the Sea and the University of Istanbul, and senior officials from Et ve Balık Kurumu. By the end of the year, sufficient data had been collected and worked up to make necessary immediate consideration of the means by which the newly acquired knowledge was to be disseminated, FAO having, in the meanwhile, offered editorial, bibliographic and other assistance in preparing material for publication.

With the decision to start printing these scientific reports in the English, French, German and Turkish languages, a major step has been taken on the road which leads to understanding of those natural phenomena in the sea upon which the fishing industry of Turkey rests.

II. SUMMARIES OF THE FIRST EIGHT REPORTS

Report No. 1. The results from a survey of the Turkish coastal waters of the Black Sea in October-November 1954 are considered.

The dominant species of fish found was the 0-group, *Sarda sarda,* (palamut). The hydrographic observations showed that the schools were limited to the upper layer of warm water and thus accessible to purse-seines. Significantly, half of the registrations were made outside the working range of the Turkish purse-seiners (Gir-girs), and there should be room for expansion of this fishery by using more advanced gear. Palamut was abundant in the autumn of 1945 right up to the Trabzon area.

Another species found in some concentration was *Trachurus mediterraneus* (istravrit) of large size. This fish was encountered in the eastern part of the Black Sea. (Incidentally, large istravrit were caught in the Bosphorus in the summer of 1954, but this is a rare event. Even the fishermen were puzzled, and they did not recognize this "strange" fish). Istravrit often form schools near and on the bottom and would then appear suitable for bottom trawling.

Temnodon saltator, (lüfer), was more or less abundant along the whole coast. This species schools in deeper water and is not usually caught by gir-girs. However, in Amasra the local fishermen shot their purse seine on a submerged school, pointed out by R/S "Arar" and believed to be palamut and they caught a fair amount of lüfer.

Schools of *Thunnus thynnus,* (orkinoz), were also found. Specially built tuna purse seiners, fitted with 'asdic' ought to prove successful in these waters. The recordings of tuna are characteristic and easily identifiable.

On this occasion the research ship carried a bottom trawl and a few experiments were made with this gear. Amongst other species, kalkan *(Scophthalmus sp.)* was caught in some quantity. It is a striking coincidence that the best hauls were made where the intermediate cold water layer covered the bottom. Further studies of this feature might prove valuable to the kalkan fishery in the Black Sea.

With sufficient experience, it should be possible to distinguish between different species in the recorded schools. This important point has been given consideration and valuable information has been obtained, but further enquiries are necessary.

Report No. 2. The dominant type of fish in the Black Sea region in the autumn of 1954 was the palamut. This fish was found exclusively in the upper layer of warmer water. When the temperatures start dropping at the beginning of the winter, the fish migrates from the Black Sea through the Bosphorus and into the Sea of Marmara. From there the

fish moves further through the Dardanelles and into the Aegean sea; but in the year under review, palamut evidently wintered to some extent in the Sea of Marmara, and a rich fishery persisted there until spring. This was probably connected with the exceptionally warm weather.

In November (11-13) 1954 a short cruise was designed to follow up the run of palamut from the Black Sea into the Sea of Marmara. The second report deals with the results from this cruise as well as the data obtained by sampling the palamut from the Sea of Marmara in December 1954. This report also contains some remarks on the landings of fish in the Istanbul fish market for a series of years. Some interesting relationships appear to emerge from this enquiry.

The hydrographic conditions in the Sea of Marmara are characterised by the striking difference between the light Black Sea water and the heavy Mediterranean water, separated by a pronounced transition layer. There is evidence that the tidal forces produce internal waves in the transition layer, the amplitude being roughly 25 m. at the time of investigation. As is well known, the tidal forces are strongest at new moon and full moon, and it is interesting to note that the landing statistics show a fortnightly period.

The above-mentioned sample of palamut from the Sea of Marmara in December 1954 revealed that the fish was immature, the sex ratio being approximately 1: 1. Other characteristics were: mean vertebral number 52.61 ± 0.18, mean length 37.96 ± 0.20 cm., and average weight 862 ± 20 g.

From the statistics given in the paper, it appears that roughly 8,000 tons of palamut were landed in the Istanbul fish market in 1954, taking the average weight as given above. The total landing has been compared with the corresponding figures for earlier years. There are indications that the data are grouped into 8 year periods of poor and rich fishing in the whole period 1928-1954. Some of the years provide, however, the invitable exceptions. In this period, 1954 is a peak year, and the prospects for 1955 should be good. (This has proved to be correct, and other statistics from about 1910, provided by FAO, also fit into the system).

Another point of interest in the report is that heavy plankton concentration in the transition layer may at this time of the year easily obscure the recordings of fish schools in the Sea of Marmara. Care should be exercised when working in these waters until further experience is gained.

Report No. 3. Presents the results of experiments with a lampara

net in the waters around Istanbul. In this paper, the gear specification is given, together with some data from a sample of fish caught with the net in the Bosphorus.

The main conclusion drawn is that the lampara net, previously not used in Turkey, is unsuitable for heavy ships like R/S "Arar" (200 tons). The gear may, however, be operated successfully from smaller ships, such as the 9-ton vessels owned by the Meat and Fish office.

The catches were weighed but the dominant species was the small istravit *(Trachurus trachurus)* and a sample of this fish was examined. Illustrations are provided showing the schooling pattern of the fish. The characteristics of the Bosphorus istravit were (February 1st 1955): dominant stage maturity III ,sex ratio about 1 : 1, mean length 15.83 ± 0.05 cm., mean weight 34.82 ± 1.26 g., vertebral number constant: 24, pectoral fin rays (right hand side) average 22 ± 0.05.

Report No. 4. Trawls are not used extensively in Turkish waters, but in the Iskenderun area the main catch is by trawling. Naturally, the chief concern of the Turkish authorities is the increase of output and export of fish. In the Iskenderun area, however, the catch had in recent years been declining, and the Meat and Fish Office wanted to know if there could possibly be over-exploitation of the stocks of fish in these waters. It was decided that Mr. AASEN should survey the situation, together with Mr. ERDOGAN AKYÜZ from the Fishery Research Center. From the 6th to the 9th of April 1955 statistics were collected in the Iskenderun area concerning the volume of catch, the fishing effort, and the gears employed. The working conditions at sea were studied in a trip with one of the commercial trawlers, and the catch was sampled, taking the barbunya *(Mullus barbatus)* - being a valuable commercial species - as an example.

The paper gives specifications and number of gears employed in the Iskenderun Sea fisheries. The enquiry revealed that no definite conclusions could be drawn and further investigations were recommended. However, what can be said fairly definitely, is that there is no evidence giving reason to encourage increased fishing in the region unless the fishing is extended to new grounds as yet unexplored. (If such grounds were found, their exploitation would call for other types of trawls than those at present employed). An argument for this policy is that the total instantaneous mortality rate of the barbunya is calculated on the basis of sampling, to be 0.54 which seems quite high. However, much more study is required before decisive action could be recommended.

Report No. 5. The hamsi *(Engraulis encrasicholus)* fisheries on the Turkish Black Sea coast play an important rôle in the economy of that region. Accordingly the "Arar" was programmed to investigate the Turkish coastal waters of the Black Sea in the hamsi season. Hamsi is usually abundant during the winter months eastwards of Amasra to the frontier with the Soviet Union.

In the fifth report the results from a survey of the Turkish Black Sea Coast in March 1955 are considered with the object of studying the occurrance of fish in relation to hydrographic factors. With respect to the environmental investigations the cruise was quite successful, although the programme was carried out only in part. On the other hand, the hamsi registrations were surprisingly few and far between. This fact accords with the fishermen's experience; the 1954 season was exceedingly poor. A hypothesis is put forward that the exceptionally warm weather prevailing in this area prior to and during the season, was one of the chief factors determining this unfortunate turn of events.

Even if man-made measures can do nothing to prevent such things happening, it would be advantageous to be forewarned. For this purpose it would be necessary to establish a regular service of sea temperature observations on the Turkish Black Sea coast.

A warning is given that when planning the expansion of the hamsi fishery, the liability for very poor seasons to occur with unknown frequency must be allowed for. Counter-measures in this connexion would be to employ modern instruments more extensively for fish detection and to intensify the search for other kinds of fish.

Report No. 6. The paper dealing with the results from the cruise to the Black Sea during the period 17th October to 15th December 1955 contains general remarks on the hydrographic situation in the area at the time of observation.

Comparison with the investigation made the previous autumn shows that the temperature conditions in the surface layer are roughly the same, but the core of intermediate cold water is slightly warmer in the latter case. This should not favour an early influx of hamsi in the following season. It is found that the water in the surface layer is rather less Saline than in the previous autumn. This feature ought to favour the influx of hamsi because this species seems to accumulate during the season in the river mouths on the Turkish coast where the salinity is low. Consequently, the prospects for the following hamsi season should be favourable, but with a late influx.

The distribution pattern of the observed plankton volumes shows certain minimum (and maximum) areas. The minimum areas coincide with the eddies in the general circulation system of the water masses.

Fish schools were located on several occasions. Fairly extensive concentrations of palamut were spotted off the Crimean coast. As before, this species stayed in the warm top-layer.

Istravrit was found in the Hopa-Rize area. This fish schooled mostly at the bottom; but in instances where there were sudden drops of temperature in the depths, the istavrit did not follow the bottom, but stayed in the warm water.

Some trawling experiments were made between Eregli and Kerempe with the object of testing the hypothesis that the kalkan prefers the intermediate cold water. Although the catches were small, and thus no conclusive evidence could be obtained, no observations contrary to the hypothesis were made.

Trawling experiments were also made on the istravrit in the Hopa area, and the catch was sampled. The fish appeared to be in an excellent condition with plenty of intestinal fat. The maturity investigations indicate a summer spawning stock.

Report No. 7. Deals with the results from a survey of the Turkish Black Sea coast in the hamsi season (14 February to 7 March 1956). The environmental factors are considered. It is significant that the temperatures in the upper layers were lower than in the previous spring. Considerable quantities of hamsi were located in Fatsa Bay. A detailed survey of the bottom relief revealed that the fish concentrated in submarine valleys at the mouth of two fairly large rivers which flow out into the Fatsa Bay. Observations in the Bay show that the salinity is very low. The horizontal temperature distribution shows that there is a tongue of cold water approaching Fatsa Bay from seawards. These facts are in good agreement with what was said in an earlier report.

The hamsi had a conspicuous daily rhythm. During daytime the schools stayed deep, at approximately 100 m. With approaching darkness, the fish came up towards the surface, the upper limit being approximately 15 metres. The hamsi was very sensitive to artificial light, as experiments with strong lamps revealed. When the light was switched on, the upper limit of the fish schools sank to 25 meters, while the lower limit of the schools stayed the same. This should mean greater concentration of the fish, a feature which could possibly be exploited.

Trawling experiments with a midwater trawl at the same locality yielded good results; each 10 min. haul produced roughly 1 ton of fish.

In the Trabzon area concentrations of large istravrit were found at the bottom near the shore. The Rize-Hopa region was also surveyed but with no trace of the istravrit. Temperature observations showed that the water masses in the Trabzon area were warmer than further east. This is in accordance with the observations made in the preceding report that the istavrit prefer warm water.

The hamsi in Fatsa Bay was sampled for various characteristics. The majority of the fish were small, (average length about 7 cm. with a weight of 2.5 g.). The catch, however, included larger individuals up to 12.5 cm. with a weight of about 4.5 g.

Report No. 8. The last report to be considered deals with a cruise to the Samsun-Sinop area for kalkan investigations. The trawling grounds were surveyed and maps prepared showing the bottom conditions.

Of the environmental factors only the temperatures are considered, and the temperature distributions show the characteristic intermediate cold water layer, although in the Gümenez section it does not reach the bottom.

The few trawling experiments made seem to support the hypothesis that the kalkan prefers cold water, but further efforts will be needed to elucidate this point.

The catch of kalkan was sampled for various characters. The sex ratio was approximately 1 : 3, with females dominating. There were also comparatively more immature males than females and, of the mature specimens, the males are found to be in the less advanced maturity stages. The dominance of stage IV indicates that the spawning season is approaching (sampling time: end of March - beginning of April).

The length of the fish varied between 30 and 65 cm., the largest weighing about 6 kg. Age readings from otoliths showed that the kalkan may reach a considerable age (12-15 years), and taken by itself this would not suggest that the kalkan stock could support a greatly expanded fishery.

The soundings made on this and previous occasions have been compiled in a map, and the interesting feature emerges that there are extensive banks in the Sinop-Samsun area, reaching out to a considerable distance from the shore (30-40 miles). The name "Arar banks" is proposed.

III. CONCLUDING REMARKS

We have mentioned briefly the circumstances leading up to the printing of the new series of scientific papers from the Fishery Research

Center in Istanbul, and summarized the main findings from the investigations so far. The published papers constitute more than a mere collection of facts; they attempt to mould the observed facts into hypotheses to be proved, disproved, or modified, as the case may be, by further investigations. These hypotheses crystallize promising lines of research to be followed up. If our account succeeds in arousing the interest of fellow scientists, its purpose is achieved. It may therefore be appropriate here to indicate some of the more suggestive results:

That the kalkan in the Black Sea being a northerly species prefers the cold intermediate water layer, would, if correct, be of importance to the fishery; it is also interesting from a zoo-geographical point of view (Report No. 1). The possible link between the behaviour of the 0-group *Sarda sarda* (palamut), and the internal waves in the Sea of Marmara (Report No. 2) may be significant. Some doubt is cast on the possible advantage to be gained by intensifying the sea fisheries on the present fishing grounds in Iskenderun Bay because the total mortality rate apparently is high (Report No. 4). Abundance of hamsi off the Turkish Black Sea coast is apparently positively correlated with low temperatures (Report No. 5). The observation on the plankton minima in the eddies in the Black Sea is significant (Report No. 6), and so is the finding that the istavrit in the eastern Black Sea seems to congregate in warm water. We note that the negative phototaxis of the hamsi possibly may be exploited by the fishery (Report No. 7). Finally, the discovery of extensive banks in the Samsun-Sinop area of the Black Sea, may find application (Report No 8, in preparation).

The tree planted jointly by the Turkish Government and FAO, is now bearing its first fruits. We are confident that these are sweet, and that their quality will improve with time.

IV. LIST OF PUBLICATIONS

Et ve Balik Kurumu

BALIKÇILIK ARAŞTIRMA MERKEZİ RAPORLARI

(Reports from the Fishery Research Center, Meat and Fish Office)

Series Marine Research

Vol. I

No. 1 AASEN, OLAV and ARTÜZ, ILHAM

Some Observations on the Hydrography and Occurrence of Fish off the Black Sea Coast, 1956.

No. 2 AASEN, OLAV; ARTÜZ, ILHAM; AKYÜZ, ERDOGAN
A Contribution to the Fishery Investigations in the Sea of Marmara, 1956.

No. 3 AASEN, OLAV; ARTÜZ, ILHAM; AKYÜZ, ERDOGAN
The Lampara Net in Turkish Waters, 1956.

No. 4 AASEN, OLAV; AKYÜZ, ERDOGAN
Some Data Concerning the Fisheries in Iskenderun Bay, 1956.

No. 5 AASEN, OLAV; ARTÜZ, ILHAM; AKYÜZ, ERDOGAN
Report on a Survey of the Turkish Black Sea Coast, 1956.

No. 6 AASEN, OLAV and AKYÜZ, ERDOĞAN
Further Observations on the Hydrography and Occurance of Fish in the Black Sea.
17 October - 15 December 1955

No. 7 AASEN, OLAV and AKYÜZ, ERDOĞAN
Fishery Investigations in Turkish Black Sea Waters With Special Reference to Anchovy.
February - March, 1956

No. 8 (In preparation).

Plan of the Fishery Research Center of the Meat and Fish Office, Istanbul, Turkey.

Scale: — 1:250

laboratory, 9. Pelagic fish laboratory, 10. Demersal fish laboratory, 11. Fish measuring laboratory, 12. Darkroom, 13. Photographic laboratory, 14. General storeroom, 15. Chemical storeroom, 16. Hydrographic storeroom, 17. Zooplankton storage, 18. Phytoplankton storage, 19. Telephone exchange, 20. Air conditioning plant, 21. Corridor (convertible to museum), 22. Corridor, 23. Men's room, 24. Women's room, 25. Staircase, 26. Skylights, 27. Lifts.

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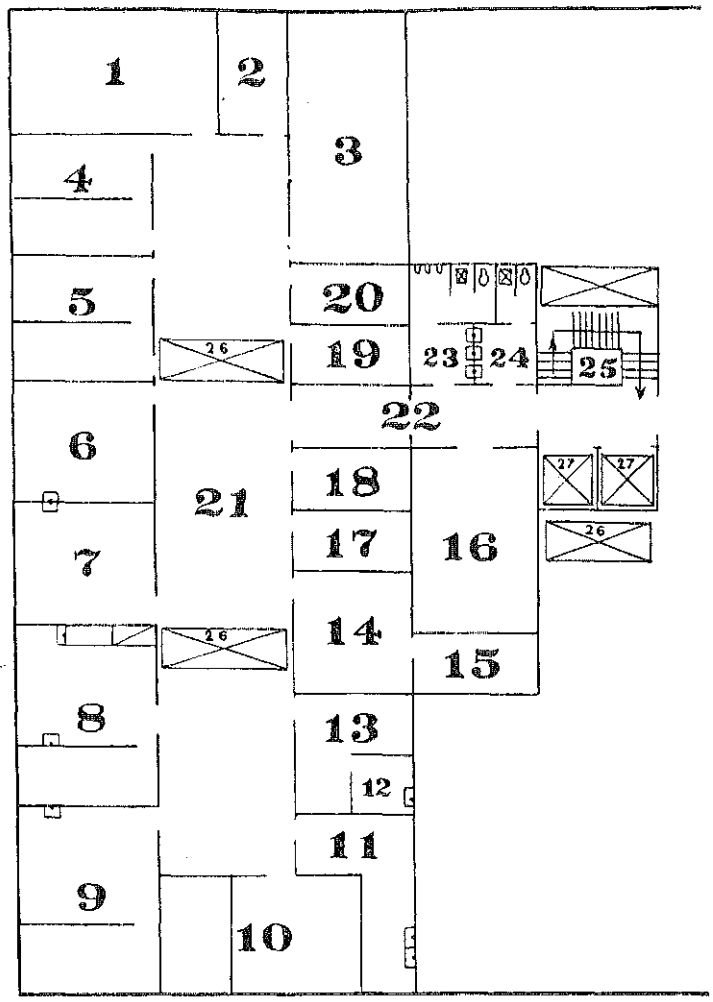
Plan of
The Fishery Research Center
of the Meat and Fish Office
Istanbul - TURKEY

Scale 1:250

Date 29.5.'56



Recent Developments In Fishing

Brief Review of
RECENT DEVELOPMENTS IN TURKISH FISHERIES

HAYDAR AYTEKİN

1. **Administration:**

In a country like Turkey which is surrounded by three seas differing from each other in character, fishing can and must be an important contributor to the national economy. This was the idea behind the Government's first attempt to promote fisheries in the 1930's. To begin with, some technical assistance was secured from abroad. A research vessel, the Balik (Fish), was bought from Scotland. Experts and technicians from Scotland, Germany, Lithuania and France came to help in developing the fisheries. Some biological investigations were made in the seas, and a fishery institute was established. But due to inefficient management and lack of administration, the whole venture ended in failure and the institute was abolished in 1936. Development was put off for another 15 years. The fishery industry was left alone, except for certain fishing regulations, some of them very old and inadequate.

In 1950-51 the Office of Soil Products (Toprak Mahsulleri Ofisi) was given the task of handling all matters concerning the fisheries industry, under the supervision of the various ministries concerned. But the task to be carried out was far too heavy for a Government agency which as its primary function had to deal with the complicated problems of grain crops. Obviously it was necessary to have a separate organization to ensure better handling of the fisheries industry. For this purpose, the Meat and Fish Office was established in 1952, to assume the responsability of handling matters concerning the fisheries. The Office enjoys full financial and administrative autonomy, and operates under the control of the Ministry of Economy and Commerce as to general policy.

2. **Fishery Statistics and Information:**

Reliable statistical data and technical information are essential to all efficient management and proper planning of any industry. It is ob-

vious that these become indispensable as soon as an administration is to decide on policy matters or to undertake enterprises of an economic character. The importance of such data and information is especially great in fisheries, where only very little, if anything is known about the frequent fluctuations in production and prices, marketing conditions, utilization of the various species, gear, location and capacity of existing industrial plants, or about the number and attitude of the people engaged in the industry.

In order to obtain statistical data on a uniform basis and regular technical information, a collaboration with local authorities has been established.

3. **Fishery Research:**

a. Hydrobiological Institute.

The Meat and Fish Office adopted the policy of ensuring scientific fishery research through the Hydrobiological Institute of Istanbul, which is purely a scientific institution attached to the University. The Institute has been provided, by the Meat and Fish Office, with all equipment and facilities including three small research vessels. A regular subsidy is granted in order to cover the expenses of the Institute.

The Institute is carrying out scientific research in both marine and fresh water fisheries. In 25 lakes investigated by the experts of the Institute, measures such as delimitation of closed seasons, selection and artificial breeding of commercially important species were taken by the central fishery authorities in conformity with the findings of the research.

b. **Fishery Research Center.**

Considering that purely scientific research work does often require considerable time before the results obtained can be effectively put into practice, it was decided that a Fishery Research Center attached to the Meat and Fish Office should undertake investigations of immediate problems, such as determination of occurrence and dynamics of commercially important species, testing different fishing gear and methods, and dealing with technological matters required for the rapid improvements of the techniques used by the industry. The Center was opened in May 1955.

A modern research vessel, equipped with echo-sounder, Asdic and other facilities has been placed at the disposal of the Center which has already started to carry out extensive fishery research in Turkish waters.

Experimental fishing for the purpose of improving and introducing new fishing gear and methods is also undertaken by the Center. Different types of nets including American purse-seines, Italian lampara nets, Danish trawls, etc.. are being tested to find out the need for improvement of local gear used at present, or the best possible gear to be introduced into Turkish fisheries.

4. **Distribution and Marketing:**

a. **Preservation.**

In view of the recognized fact that the solution of most of the problems in fisheries is dependent upon the existence of an effective preservation system in a country where the landings are subject to considerable fluctuations, the Meat and Fish Office has made it a point to erect cold storage plants and ice factories in all important fishing ports. To begin with, 8 cold storage plants were constructed, four of them being on the Black Sea coast (Trabzon, Samsun, Sinop, Zonguldak) one on the Bosphorus in Istanbul, one on the Marmara Island and one on the Aegean coast, near Izmir).

These plants are of two types, ice-making and cooling, and ice-making, cooling and freezing. The purpose of the cooling plants is to facilitate distribution of the catches by supplying the necessary ice and providing refrigerated storage for collection and, if necessary, a few days' storage of the fish. The freezing plants are designed to preserve the peak supplies of the seasons, the surpluses which cannot be marketed fresh, until periods when marketing conditions are more favorable.

In order to complete the refrigeration chain, the Office has decided to erect 34 cold storage plants in inland areas.

b. **Transport.**

Since the cold storage and ice making plants now in operation have made the distribution of fish to consumption centers possible, planning of big-scale distribution was given active consideration. The implementation of the plan required, first of all, the establishment of a refrigerated transport system. Insulated trucks and insulated railways vans were needed. The Meat and Fish Office therefore provided 17 insulated trucks, of 4 to 7 tons each, and devoted 5 insulated railway vans to the transport of fish to inland areas, namely to Ankara, Erzurum, Konya, etc.

The Office operates 8 fish transport boats, 3 of 100 tons, 2 of 60 tons, 1 of 40 tons and 2 of 20 tons. The holds of the boats are insulated and designed to carry fish fresh as well as frozen.

c. **Pilot Retail Shops.**

The prerequisite of increasing the fish consumption in inland areas is fresh fish of good quality and at reasonable prices. Fish retail shops in inland areas are either non-existent or too poorly equipped to maintain the good quality, and fish prices are considerably high.

To improve this situation the Meat and Fish Office sponsored pilot retail shops in Ankara, where fish is available at reasonable prices throughout the year. This experience proved to be of great success in inducing the old retailers in the area to reduce the prices to the levels in the pilot shops and to endeavour to improve the outfits of their own shops.

d. **Exports.**

Financial and technical facilities provided by the Government to encourage the fish exports increased the amount of exports in recent years. The quantity of fish exported in 1951 was only, 2,947 tons whereas it amounted to 15,051 tons in 1955. The bulk of the exports consists of fresh and frozen fish. A certain amount of smoked, salted, cured and canned fish is also exported.

Greece, İtaly, Yugoslavia, Roumania were the principal importers in 1955.

e. **Credit Facilities.**

It is an established fact that shortages of vital items of equipment such as twine and engines reduced in the past the efficiency of Turkish fishing to a considerable extent, and as a result per capita income in fisheries declined to such low levels as to cover only the bare necessities of the fisherman's and his family's livelihood. Consequently fishery trade and industry declined. Capital was diverted to other fields.

There are good reasons today, however, to believe that more intensive fishing will have a favourable effect on the economic well-being of the fishery population and of the country in general, and that it is possible and desirable to develop the fishery trade and industry in Turkey through mechanization, improved equipment and modern techniques. But all of these require heavy capital investments and scarcity of capital in fisheries is far more acute than in other sectors of the economy.

The solution of the problem was to be found in establishing adequate credit facilities. In 1953 the Agricultural Bank of Turkey was given the authority to grant necessary and convenient credit to fishery enterprises.

The Bank for this purpose earmarked **Turkish £ 15 million** out of its funds.

But another aspect of the problem was the difficulty of obtaining the equipment and machines required, for these had to be imported from abroad. Here the Meat and Fish Office assumed the responsibility of collective import and resale of the equipment. Apart from its contact with the fishery industry and its continuous engagement in fishery work the Office had some previous experience in administering purchases and distribution of fishery equipment. In fact, a few years ago 12.000 packages of twine and 41 marine engines were imported and distributed to the fishermen on loan basis.

Under these circumstances, organization of a credit scheme was initiated in cooperation with the Agricultural Bank. An advisory committee was set up in each important fishery district. Each local advisory committee consists of the Governor of the Province, director of the Branch of the Agricultural Bank, at least two representatives from the fishery industry, director of Commerce, Ministry of Economy and Commerce, and representative of the Meat and Fish Office. The Governor is the chairman of the committee. The duties of the committees are to find out the need for the fishery equipment and to formulate suggestions as to their distribution to the fishermen and advise the central fishery administration in all matters concerning fisheries.

5. **New Industries:**

a. **Twine.**

Twine used to be imported from abroad until last year when the possibility of making it in one of the existing thread factories was found out. Orders for 50 tons of twine of various thickness were placed to the factory. About half of the amount was delivered by the factory to the Meat and Fish Office which in turn distributed it to the fishermen in Istanbul area.

The second lot was devoted to other areas. It is estimated that 50 to 80 tons of twine will meet the annual requirements.

b. **Fish meal and oil plants.**

The large quantities of fish landed in seasonal peacks create a problem of utilization of surpluses. This is the case especially in Eastern Black Sea where the peak seasonal landings cannot be readily marketed on the spot or transported into hinterland areas and consumed there.

To remedy this situation a fish meal and oil plant has been designed

to reduce 100 tons of fish per day into meal and oil. The construction of the building is now completed and layouts of the plant are expected to be installed by the end of 1956. The plant was originally planned as to be completed by the end of 1954 or early in 1955, but due to the difficulties in arranging the delivery of the machine to be purchased from abroad a delay of nearly two years has taken place in putting the plant into operation.

Dolphin fishing is also important in the Black Sea. The flesh of dolphin is not consumed as food in this country. A thick layer of fat (4 to 7 cm) covers the body of the fish. The catches of dolphins vary between 9 to 15 tons a year, and the fat is melted in ordinary caldrons and then left to be clarified. The crude oil thus obtained is exported, mainly to Germany. But the low quality of oil does not fetch good prices and dolphin fishing showed a steady decline in recent years.

In view of the circumstances the Meat and Fish Office equipped a small fish meal and oil plant of a capacity of 30 tons per day and put into operation in November 1954. Good results were obtained from the operations of the plant.

6. Net Making Factory:

In order to supply net to the fishermen a net making factory was constructed in the premises of the Cold Storage Plant at Beşiktaş, Istanbul, in September 1955. The factory which is installed with five machines is now successfully run by the Meat and Fish Office.

With these machines it is possible to weave twine of various thickness from number 16/12 to 120/12. The annual output of the factory is expected to meet about 1/3 of the total requirement for nets in this country.

F.A.O. Beynelmilel İç Sular Balıkçılığı Toplantısı

(Helsinki, 24-26 Temmuz 1956)

Prof. Dr. RECAİ ERMİN

F.A.O. tarafından tertip edilen Beynelmilel İç Sular Balıkçılığı toplantısı 24-26 Temmuz 1956 da Helsinki'de yapıldı. 27 Temmuz - 2 Ağustos 1956 tarihlerinde XIII. Beynelmilel Limnoloji Kongresi de Helsinki'de toplandığından yakın ilgisi dolayısiyle F. A. O. idarecileri toplantı yeri olarak aynı şehri seçmişlerdi. Toplantıya 25 memleketin delege ve müşahitleri iştirâk etti. Beynelmilel Limnoloji Kongresi üyelerinin bir kısmı da bu toplantılara müşahit olarak iştirâk ettiler. Bunlardan başka GFCM, ICES, ICSEM, UNESCO teşekküllerinin mümessilleri de gelmişlerdi.

Konferans Fin Hükûmetini temsilen Finlandiya F. A. O. Millî Komitesi Başkanı ve Sosyal İşler Bakanı Dr. Eino Saari'nin bir nutku ile açıldı. Bunu takiben F.A.O. Balıkçılık Şubesi Müdürü Dr. D.B. FINN bir konuşma yaptı ve toplantının gaye ve maksatlarını açıkladı. İç sular balıkçılık esanayiinin ehemmiyetini ve bunun gün geçtikçe arttığını belirten Dr. FINN dünya iç sularından senede 3 milyon ton balık istihsal edildiğini, bunun dünya balık mahsulünün %12 sini teşkil ettiğini ve henüz bu sahada geri kalmış memleketlerde tatlı su balıkçılığını inkişaf ettirmek suretiyle bu miktarın çok daha artabileceğini bildirdi. Son senelerde deniz balıkçılığı sahasındaki beynelmilel çalışmaların son derece inkişaf ettiğini ve halen dünya denizlerinin beynelmilel organizasyonlar marifetiyle işletildiğini söyleyen Dr. FINN içsular balıkçılığı sahasında bu bakımdan beynelmilel bir iş birliğinin kâfi derecede yapılmadığına, beynelmilel fikir mübadeleleri sayesinde bunun da gelişeceğine işaret etti. Çalışmaların şu üç nokta üzerinde teksif edilmesi lüzumu belirtildi:

1 — Ziraatte, ormancılıkta, deniz balıkçılığında olduğu gibi tatlı su balıkçılığında da fikir teatisinde bulunacak ve bu balıkçılığın organize edilmiş bir şekilde gelişmesini sağlayacak bir mekanizmaya veya assosiyasyona lüzum var mı?

2 — Delegeler böyle bir organizasyonun yaratılması zamanının geldiği kanaatinde midirler?

3 — Eğer bu zaman gelmişse hangi şekilde bir organizasyon veya mekanizma kurmak suretiyle bu gayeye ulaşılabilir?

Ayrıca F.A.O.nun böyle bir teşekküle yardıma hazır bulunduğuna işaret ediliyordu.

Bu gayelerle başlıyan çalışmalar esnasında evvelâ F. A. O. Balıkçılık Şubesi Biyoloji zümresinden W. A. DILL'in hazırladığı (Avrupa'da iç sular balıkçılığının bu günkü durumuna bir bakış) adlı rapor etrafında münakaşalar yapıldı. Münakaşalar şu noktalar üzerinde cereyan etti:

1 — Tatlı su balıkçılığı membalarından halen ne derece istifade edildiği,

2 — Bu membalar hakkında kâfi bilgi mevcut olmadığından veya buralarda kâfi kontrol ve administrasyon yapılamadığından ve metod, alet vesairenin yeter derecede olmamasından bu membalardan elde edilecek istifadenin ne dereceye kadar tahdit edildiği,

3 — Bu sahayı daha verimli hale getirmek ve genişletmek için iç suları balıkçılığı statüsünde alınması lâzım gelen tedbirler;

4 — Bu sahanın genişletilmesi ve 2 nci maddede zikredilen noksanların giderilmesi maksadiyle yapılması lâzım gelen programların şekilleri.

5 — Beynelmilel faaliyetlerin bu bakımdan oynayacağı rol.

Delegelerin bu meseleleri münakaşaları esnasında bilhassa bir çok memleketlerde daha fazla deniz balığı yenildiğine, tatlı su balıklarının göl ve akar suların bazan uzak bölgelerde bulunmasiyle nakillerinin güçlüklerine, ev kadınlarının hazırlaması daha güç olduğu için tatlı su balıklarına kıymet vermediklerine, gerek tatlı su balıkları ihracı ve gerekse kullanılması için gerekli propagandanın yapılması lüzumuna işaret edildi. Bununla beraber bir çok memleketlerde tatlı su balıklarının kültürlerinin son derece ilerlediği, bilhassa alabalık, sazan kültürlerinden çok iyi netice alındığı belirtildi. Tatlı sularda sazan gibi domestikasyona uğramış balıkların çok az olduğu, bazı ekzotik türlerin diğer memleketlerde yayılmasının temini, son senelerde *Tilapia* cinsinin bazı türlerinden çok istifade edildiği, iktisadî ehemmiyeti haiz balıkları olmıyan tatlı sulara, alabalık, *Tilapia*, sazan, *Coregonus* gibi önemli balıkların lüzumlu araştırmalar yapıldıktan sonra yerleştirilmesinin önemi ileri sürüldü. Bu arada Avrupa'da tatlı suların lâğımlar, fabrika vesair gibi endüstri artıkları tarafından kirletildiği, hattâ bu yüzden balıkların lezzetlerini kaybettikleri, tatlı sularda yaşayan bütün canlıların büyük bir tehlike karşısında olduk-

ları anlatıldı. Diğer bir mesele de iç sularda balıkçılık yapanların durumu oldu. Bunların çoğunun amatör balıkçı olduğu, bunlardan sahih istatistikler elde edilemediği, Finlandiya gibi bazı memleketlerde balıkçıların daha ziyade aileleri için balık avladıkları, iç sular balıkçılarının bazı kayıtlar altına alınması, muntazam ve sahih istatistiklerin temini problemleri münkaşa edildi.

Bundan sonra Dr. E.D. Le CREN tarafından hazırlanan (İlmin iç sular balıkçılığına tatbiki) adlı raporun münakaşasına geçildi. Raporda bir suda produksiyon ve balık istihsali prosesleri beş esas kademeye ayrılmıştı:

1 — Bitkiler tarafından meydana getirilen primer produksiyon,
2 — Bunun normal olarak hayvanî besin zinciri yoliyle balık gıdasına tahavvülü,
3 — Balıkların beslenmesi ve besinlerin büyümekte olan rolü,
4 — İstihsal edilen balık,
5 — Üretme vasıtasiyle balık popülâsyonunun yeniden teşekkülü.

İç suların ve drenaj bölgelerinin insanlar tarafından kullanılması balıkçılık araştırmalarında ve işletmesinde birtakım özel problemler ortaya çıkarmıştır:

1 — Ziraat, kara ve su çiftliklerinin genişletilmesi, bazı yerlerde suların kurutulması (drenaj), bazı yerlerin sulanması (irrigasiyon), insektisidlerden istifade,

2 — Akar suları tanzim eden ve su depoları vazifesini gören barajların tesisi ve umumî su ekonomisi,

3 — Seyrisefain (navigasiyon) ve nehir yataklarının kanallar vasıtasiyle birleştirilmesi,

4 — Göl ve akar suların lâğımlar ve fabrika vesaire artıkları tarafından kirletilmesi,

5 — Hıfzıssıhha, bazı insan hastalıklarını tevlit eden parazitlerin sularda yaşayan ara konakları, bunların kontrolünde balıkların kullanılması,

6 — İç sulardan sporda ve ticarî balıkçılıkta istifade.

Raporda bütün bu problemlerin hallinde ilmin yardımına ihtiyaç olduğu zikredildikten sonra limnolojinin eskiden daha ziyade tatlı su organizmalarının geniş mânada biyolojileri ile meşgul olduğuna, istihsal kudretlerine göre göllerin tasniflerinin yapıldığına ve doğrudan doğruya balıkçılık biyolojisine alâka gösterilmediğine işaret ediliyordu. Eskiden tatlı su balıkçılığı biyolojisi üzerine yapılan araştırmalar daha ziyade şunlara teksif edilmişti:

a) Mühim türlerin ökolojilerinin tetkiki,
b) Tatlı sular hakkında umumî araştırmalar,
c) Teknoloji ve işletme proscdürleri.

Ayrıca istikbalde esas araştırmaların prodüksiyon problemlerine, yosunların ökolojisi ve fizyolojisine, besin zincirinde rol oynıyan organizmaların popülasyon ökolojisine, popülasyon dinamiğine, genç safhaları ile birlikte balıkların fizyolojisine önem vermesine işaret edildikten sonra balıkçılık biyolojisinin daha ziyade teorik ve matematik bilgilerden istifade etmesi lâzım geldiği, iç sular balıkçılığının üniversiter disipline sokularak herhangi bir tesir altında olmadan yapılan ilmî araştırmalara dayanarak balıkçıların ve idarecilerin elele vererek çalışmalar ile iç sular balıkçılığının çok gelişeceği ileri sürülüyordu.

Bu raporun münakaşası sırasında baraj göllerine verilmesi lâzım gelen ehemmiyeti, tatlı su ve deniz balıkçılığı enstitülerinin elele vererek çalışmaları, ufak ve fakir memleketlerde bu teşekküllerin birbirinden ayrılmaması lüzumu, üniversitelerin bu problemleri muhakkak ele almaları lâzım geldiği, limnologlar ile balıkçılık biyologları arasındaki sıkı iş birliği, tatlı suların kirletilmesi meselelerinin önemle ele alınması, ziraatçilerin toprak kazanmak maksadiyle yaptıkları kanalların zararları belirtildi. Bunlardan başka bilhassa muhtelif memleketlerin müşterek nehir ve göllerinin muhafazası ve beynelmilel sulara verilmesi lâzım gelen ehemmiyet, balıkların tabiî yumurtlama yerlerinin muhafazası gibi problemler ele alındı.

Raporun tetkikinden sonra bu sahada beynelmilel faaliyetin ne şekilde yapılmasının lâzım geldiğine dair münakaşalara geçildi. Münakaşaların anahatlarını şunlar teşkil etti:

1 — Bibliografik listelerin tanzimi ile meşgul olacak bir dokümentasyon servisinin tesisi ve bir mecmua neşri,

2 — Meslekî toplantılar temini,
3 — Konferanslar ve simpoziumlar tertibi,
4 — Programa ve etüdlere ait malûmatın mübadelesi,
5 — Etüd bursları tesisi,
6 — Tedrisata lüzumlu imkân ve kolaylıkların mübadelesi,
7 — Tatlı su ve deniz balıkçılığı ile meşgul olanların arasındaki temasın genişletilmesi.

Bunların münakaşası sırasında malûmat ve donelerin dağıtılmasına yarayan bir merkezin lüzumu, bir büronun kurulmasının zamanının geldiği ve 1922 senesinde kurulan Limnoloji Cemiyetinin bu işleri yapıp yapamıyacağı meseleleri ele alındı. Bundan sonra tatlı su balıkçılığı işleri

ile uğraşacak ayrı bir teşekkülün lüzumuna ihtiyaç olup olmadığı meselesine geçildi. Bazı memleketler ve bu arada Türkiye mevcut teşekküllerle iç suları balıkçılığı sahasında beynelmilel iş birliğine imkân olmadığı takdirde yeni bir teşekkülün kurulması lüzumuna işaret ettiler.

Neticede iç sular balıkçılığının inkişaf ettirilmesi ve bunun için de beynelmilel faaliyetlerin lüzumuna kanaat getirildiği anlaşıldı. Bunun için de F. A. O. Genel Direktörüne Avrupa'da F. A. O.'nun azası olan memleketlerin tatlı su balıkçılığı işlerini idare edecek ve F. A. O.'yu ve aza memleketlerin hükûmetlerini aşağıdaki hususlarda tenvir edecek eksperlerden müteşekkil daimî bir komitenin kurulmasının teklif edilmesi kararlaştırıldı. Komitenin meşgul olması tavsiye edilen hususlar şunlardır:

1 — İç sular balıkçılığı sahasındaki malûmatın toplattırılması ve dağıtılması,

2 — Münasip simpoziumların organizasyonu,

3 — Hükûmete ait olan ve olmıyan organizasyonlarla iş birliği yaparak hakikî bir tatlı su balıkçılığının arzu edilen bir şekilde tekâmülü için bu bölgedeki alâkadar hükûmetler arasında organize edilmiş yakınlaşmanın temini,

4 — Organizasyonun kompetansı dahilinde tatlı su balıkçılığından azamî istifade ve bunun gelişmesinin teşvik edilmesine mütcallik diğer bütün işler.

Göller memleketi Finlandiya'nın başşehri güzel Helsinki'de toplanan bu kongrede alınan kararların memleketimizin ve bütün Avrupa memleketlerinin iç suları balıkçılığına hayırlı olmasını temenni ederim.

Report on the Improvement of Gır-Gır Seines

(Gır-gır Ağlarının Islâhı Hakkında Rapor)

RAGNAR GUDMUNDSSON

HÜLÂSA:

Gır-gır ağları, memleketimizde en fazla av temin eden ağlardan maduttur. 1956 yılı Martında bu ağların, az personel ile, daha kolay istimal edilir bir hale getirilmesi için, İzlandalı balıkçılık uzmanı RAGNAR GUDMUNDSSON, Fatsa'ya gitmiş ve mezkûr ağların modernize edilmesiyle meşgul olmuştur.

Tatbikatta müşahit sıfatiyle bulunanlar ve Fatsa Balıkçılar Kooperatifi tarafından temin edilen gır-gır takımında çalışan balıkçılar, bu muaddel ağın, gerçekten eskisine nazaran çok daha kullanışlı olduğuna kanaat hasıl ederek eski ağların tadili hususunda karara varmışlardır. Balıkçılık uzmanı bu yazısında hamsi avında kullanılan gır-gır ağlarının tadilinden ve istimalindeki rüçhan sebeplerinden bahsetmektedir.

*
* *

Introduction:

Gır-gır seines are much used by Turkish fishermen and the greater part of the total annual catch is taken with them. Attempts were made to improve the gear in March 1956 and some alterations were suggested to modernise the pursing, hauling and stacking of the net. In this report the original gır-gır seine and the alterations made are described and illustrated.

Construction and Operation of The Gır-gır seines:

A normal sized gır-gır seine is 150 fms. Long and 40 fms. deep. The mesh sizes vary between 7 mm. (Anchovy mesh) and 60 mm. (Bonito mesh). The body of the net consist of two big pieces lashed together. Each piece has a length of 70-75 fms. and a depth of 30-40 fms., which

is the same as the depth of the whole seine. The corks giving buoyancy to the net are arranged at 50 cm. intervals along a manila rope, which is attached to the body of netting by a narrow salvage strip. The total weight of the corks on the line is 50 - 60 Kg. (Fig. 1.)

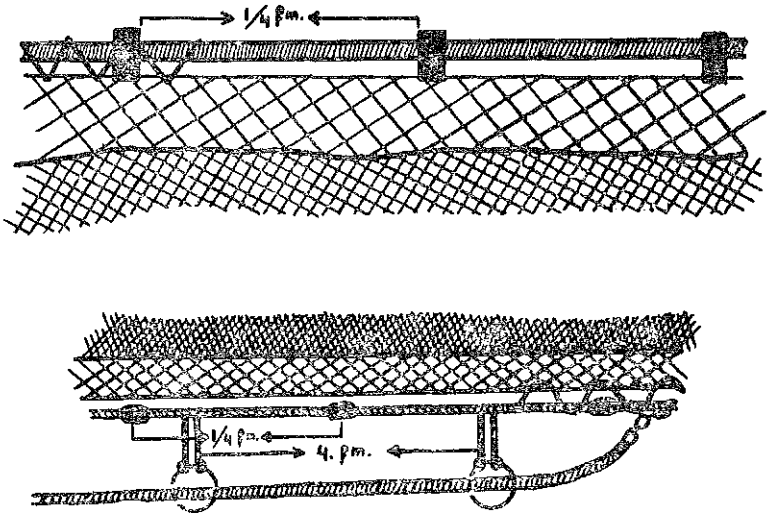


Fig. 1 — The cork line and the lead line of a gır-gır seine.

The lead line is shorter than the cork line and attached to the body of netting as the cork line. There are approximately 500 lead weights on the line. 18 cm. brass purse rings are hung on the lead line with bridles at every 4 fms. (Fig. 1.) The purse line is in two parts and each part is attached to the body by swivels, on the lead line where the bunt starts (Fig. 2).

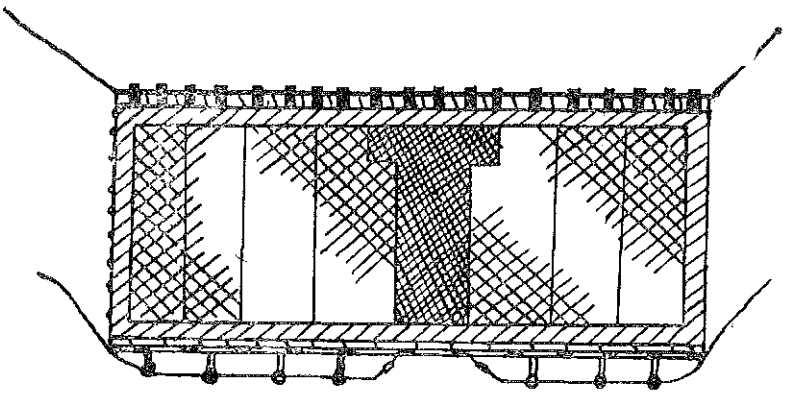


Fig. 2 — A typical gır-gır seine.

Operation:

Gır-gır seines are shot either by two rowing boats or one motor boat and a rowing boat. However, in the Black Sea only the two rowing boat system is used. The net is stacked on the boats and when the fish are detected is shot as the boats encircle the schools. As soon as shooting is finished there starts the pursing operation, which is done by hand and requires a fair amount of time.

Alterations Made:

The experiments for the suggested alterations to the gır-gır seine were made using a 350 fms. anchovy seine. It was observed that that the design of the purse line and the system of pursing were highly inefficient. Tte attachment of the purse rings on the lead line was altered and new bridles were introduced Extra weight was added on the bridles to fasten the sinking of the lead line. (Fig. 3) The ends of the purse lines

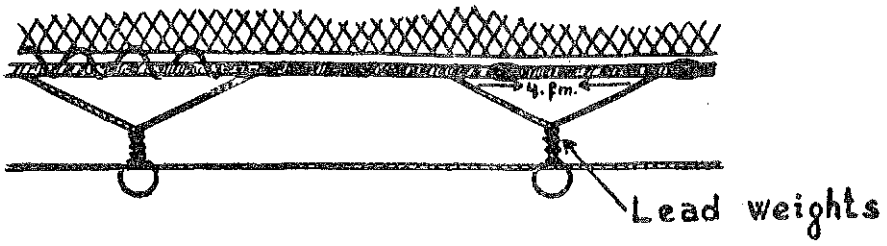


Fig. 3 — The lead line of the modified gır-gır seine showing the attaement of the rings.

Conclusion:

The modified gır-gır seine was proved to be more effective for anchovy fishing than an ordinary gır-gır seine. The davits and winches mounted on the boats greatly increased the efficiency of the gear.
on the original seine, were extended and connected to each other by a swivel. To symplify the pursing operation a bow davit and a hand operated winch were mounted on each of the rowing boats. The introduction of these new devices shortened the pursing time by half, and saved a lot of labour.

From what I have experienced of the performance of the modified gear, I conclude that these alterations should be applied to all the gır-gır

seines operating in Turkish waters. Furthermore, equipping seine boats with davits and purse winches will certainly increase the efficiency of the gear.

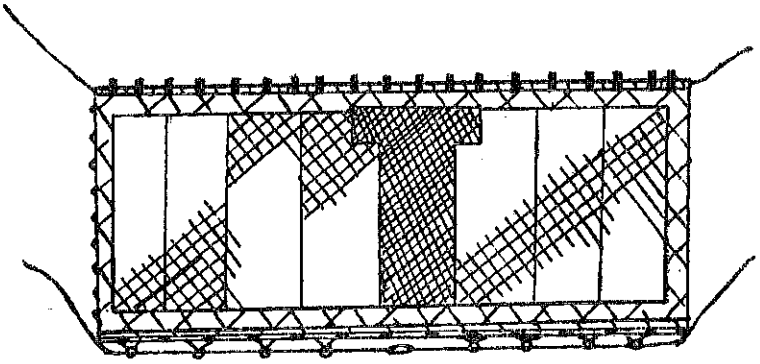
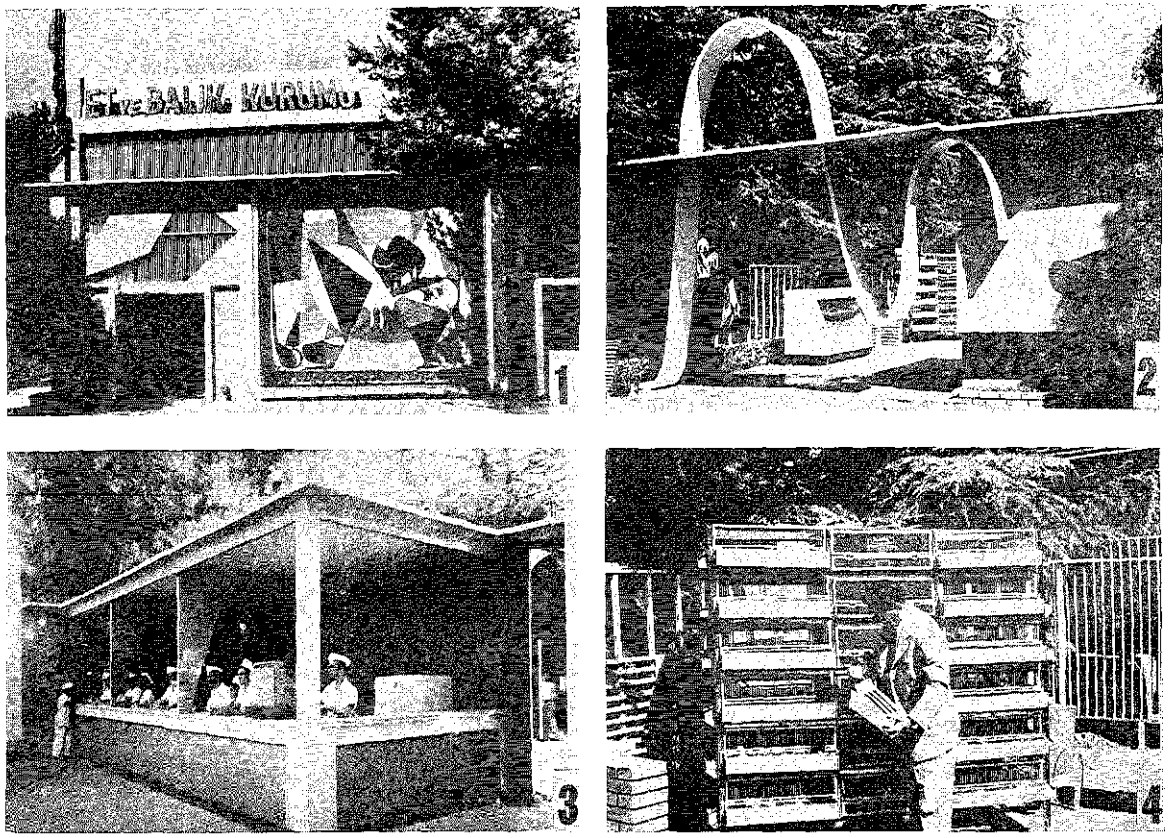


Fig. 4 — The modified gir-gir seine.



Şekil 1 — Enternasyonal İzmir Fuarında, Et ve Balık Kurumu pavyonu, Şekil 2 — Pavyondan başka bir görünüş, Şekil 3 — Pavyonda sosis, salâm ve sucuklu sandviç satılan kısım, Şekil 4 — Pavyonda civciv satışından bir intiba.

Fig. 1 — The Meat and Fish Office stand at the International Izmir Fair, Fig. 2 — Another view from the stand, Fig. 3 — A section of the stand where frankfurters are sold, Fig. 4 — The sales stand of the M.F.O. chicken farm.

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