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ZOOLOGISCHE MEDEDELINGEN

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**CONCISE SURVEY OF LOCALITIES AND COLLECTION
NUMBERS OF ZOOLOGICAL AND BOTANICAL SPECIMENS,
COLLECTED BY THE NETHERLANDS BIOLOGICAL
EXPEDITION TO TURKEY 1959**

I. INTRODUCTION

In the spring of 1959 E. Hennipman, P. Nijhoff, C. Swennen, A. S. Tulp, W. J. M. Vader and W. J. J. O. de Wilde made a biological collecting expedition to Turkey. The record of this journey of the "Nederlandse Biologische Expeditie Turkije 1959" appeared in "De Levende Natuur" vol. 64, supplement to no. 5 (1961). Here follows a condensed description of the localities where material was collected as well as a list of collection numbers of the zoological and botanical specimens.

The route followed by the expedition is indicated on map 1, on which are also indicated the areas shown in the more detailed maps 2, 3, 4 and 5.

Since, on the one hand, geographical names in Turkey are subject to alterations and on the other certain names are used several times for quite different places, the numerous topographical synonyms and homonyms repeatedly cause confusion in literature. That is why all geographical names occurring in this contribution are fixed by means of the maps. All data are taken from the maps 1 : 200,000 of the Turkish Ordnance Survey.

The complete zoological collection is now in the Rijksmuseum van Natuurlijke Historie at Leiden.

Of the botanical collection, the specimens of which are labelled: "Flora Turcomanniae Asiaticae, iter Leydense 1959", the first set, containing among other things all unique specimens, is now in the Rijksherbarium in Leiden. Duplicate sets were sent to the Laboratorium voor Plantensystematiek en -geografie at Wageningen, the Royal Botanic Gardens at Kew, the Botanisches Museum in Berlin, the Botanisch Museum en Herbarium at Utrecht and the Botanik Enstitüsü in Ankara.

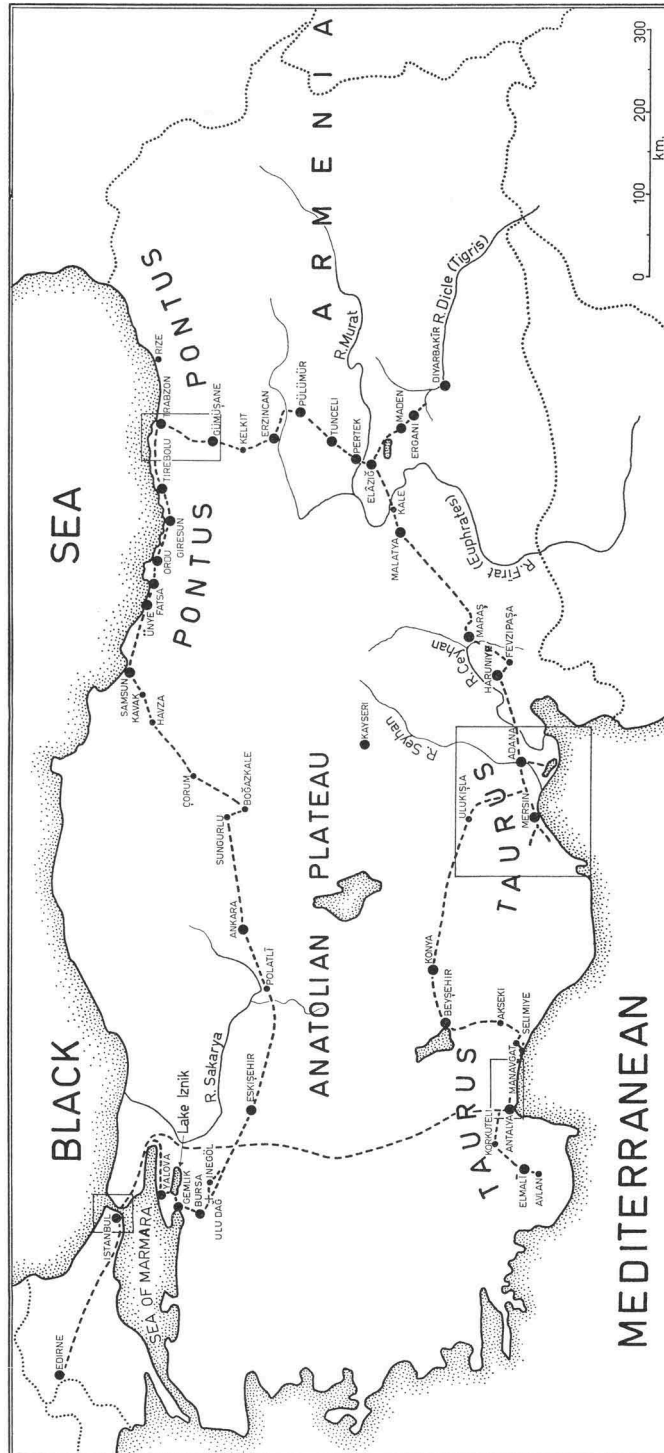


Fig. 1. Map of Turkey with localities mentioned in the text and route followed by the expedition. The four squares refer to the detailed maps: Istanbul fig. 2, Antalya fig. 3, Mersin fig. 4, Trabzon fig. 5.

As concerns the letters preceding the collection numbers, the following may be noted: the letters S and V belong to the zoological material and refer to the numbering by Swennen and Vader respectively; dW refers to the numbering by De Wilde of Pteridophyta and Spermatophyta, H by Hennipman of Thallophyta and Bryophyta.

2. HOLLAND-ISTANBUL (March 16th-20th)

During breaks in the journey by train to Istanbul some zoological material was collected in a few places in Northern Greece.

LOCALITIES AND COLLECTION NUMBERS

Greece:

Thessaloniki, 18/3/59, altitude 0-20 m,
in garden near Church of St. George — V 1;
in harbour, landed by fishermen — V 2.
Alexandroupolis, 20/3/59,
washed ashore on beach — V 3.

3. ISTANBUL (March 20th-April 16th; June 22nd-27th)

The average temperatures in the area of Bosphorus and Sea of Marmara are 5.7° C in January and 23.4° C in July. The figures for precipitation are 500-650 mm, the greater part falling in the winter half-year.

Collecting was done in and around the city and in the hills of the European and the Asiatic banks of the Bosphorus. In late March, in some places, these hills were decked out in white by flowering *Ornithogalum* sp. Furthermore the Belgrade forest north of Istanbul was visited. This wood is the last remnant — about 12,400 acres — of the vast forests which formerly surrounded Istanbul. The preservation of this nature reserve is due to the presence of seven reservoirs which were constructed there in the 18th century to obtain drinking-water and which even now are used as such occasionally, if only in case of emergency.

The Belgrade forest is a fine example of a deciduous timber-wood with a rich undergrowth. We observed among other things: *Quercus* div. spp., *Fagus* sp., *Corylus* sp., *Carpinus* sp., *Tilia* sp., *Hedera helix* and *Clematis vitalba*, in the moist parts moreover *Alnus* sp. and *Typha* sp. and in the higher parts, poor in lime, *Pteridium aquilinum*, *Erica* sp. and *Calluna* sp.

LOCALITIES AND COLLECTION NUMBERS

Province of Istanbul:

Istanbul, altitude 0-50 m,
in garden near Saint Sophia's — 21/3/59 V 4;
in crevices of wall of Bab-i-Humayun — 21/3/59 V 5;

- on and near Byzantine city-walls near the fortress of Yedikule — 22/3/59 S 3, V 6, 8-9, dW 1-7;
 on wall near the mosque of Piyalepaşa — 23/3/59 H 1-2, dW 8-9;
 on wall of the mosque of Beyazid — 23/3/59 S 5;
 under trees near Topkapı Serail — 28/3/59 dW 19;
 in heated glass-houses of botanical garden of University — 29/3/59 V 16.



Fig. 2. Detailed map of Istanbul and surroundings.

- Anadolu Kavak, 24/3/59,
 washed ashore on beach — V 7;
 growing on stones — H 3-6.
 Rumeli Hisar, surroundings of fortress, altitude 0-50 m,
 on loamy slope — 25/3/59 H 7-10, S 2, V 10, 13, dW 10-18; 11/4/59 S 37, 42, dW
 484-487; 26/6/59 dW 21, 22;
 in neglected, rocky garden along road — 1/4/59 S 1, 4, V 17, dW 22-29;
 in small stream — 11/4/59 S 48;
 in Baltalimandere — 11/4/59 S 50;
 in Bosphorus (depth 0-1 m) — 26/6/59 H 186, S 157.
 Eyüp, altitude 0-50 m, 28/3/59,

- on hills along Golden Horn — dW 20-21;
 on small island in Golden Horn — V 14-15.
 Florya, altitude 0-50 m, 2/4/59,
 washed ashore on beach — S 9;
 among stones on beach — H 13, S 7-8, 11;
 on loamy slopes — H 11-12, S 6, 10, dW 30-64.
 Bahçeköy, Orman Belgrad (Belgrade forest), altitude 50-100 m,
 in wood — 8/4/59 dW 465-476; 26/6/59 H 185, S 155, V 204, dW 2098-2121;
 in small stream — 8/4/59 S 40, V 40; 26/6/59 S 156, V 205.
 Kilyos, 5/4/59,
 washed ashore on beach — V 79.
 Beylerbey, altitude 0-50 m, 10/4/59,
 on slopes — S 38, 41, dW 477-483.
 Büyükdere, altitude 0-50 m, 12/4/59,
 in hills with low shrubs and small streams — dW 488-497.
 Kefeliköy, altitude 25 m, 12/4/59,
 in Bakladere — V 41, 91.

4. ANTALYA (April 4th-May 5th)

The plain of Antalya — formerly known as Pamphylia — is situated around the Bay of Antalya and is bounded on the west, north and east by the chain of the Taurus mountains, with summits of over 3000 m, and on the south over a distance of more than 100 km by the Mediterranean. In many places the ground consists of hard rock with a layer of red top-soil.

The average January-temperature in this area is 10° C, the July-temperature 34° C; the temperature is seldom below zero. Annual precipitation amounts to 1000-1200 mm, falling mainly during the winter months and early spring.

There is very intensive grazing by goats, sheep, donkeys and dromedaries. The open, shrub-like vegetation of the plain consists mainly of very thorny or poisonous species, as prickly-leaved *Quercus* sp., *Euphorbia* sp., *Smilax* sp., *Asphodelus* sp. and *Urginea maritima*. Herbs and mosses are very poorly developed or altogether absent. Species which are neither thorny nor poisonous were only to be found in inaccessible places on precipices, in impenetrable thorny brushwood and in well-closed gardens.

Faunistically this area is not very interesting: the variety of insects was (as yet) rather small. Of the larger animals, chiefly *Testudo graeca* and a lizard drew our attention, as well as 15 cm long centipedes found under stones.

We visited the Düdenbaşı, a ravine of 20 m depth with a luxuriant vegetation where a swift running brook emerges from the rocks. This brook — formerly the Catarractus, now called Düden Çayı — falls into the sea from a rock of over 60 m height near the city.

In the horticultural area immediately east of the city we visited an experimental citrus-station, where 57 varieties of oranges, 25 varieties of lemons and also tangerines, grape-fruits and dates are cultivated. The streams in this fertile and irrigated area are very rich in calcium; a fairly recent carcass, lying under a cascade, was already covered with a thin calcareous layer. A continuously growing limestone rock is formed, where these water-courses from the Taurus finally end in the sea.

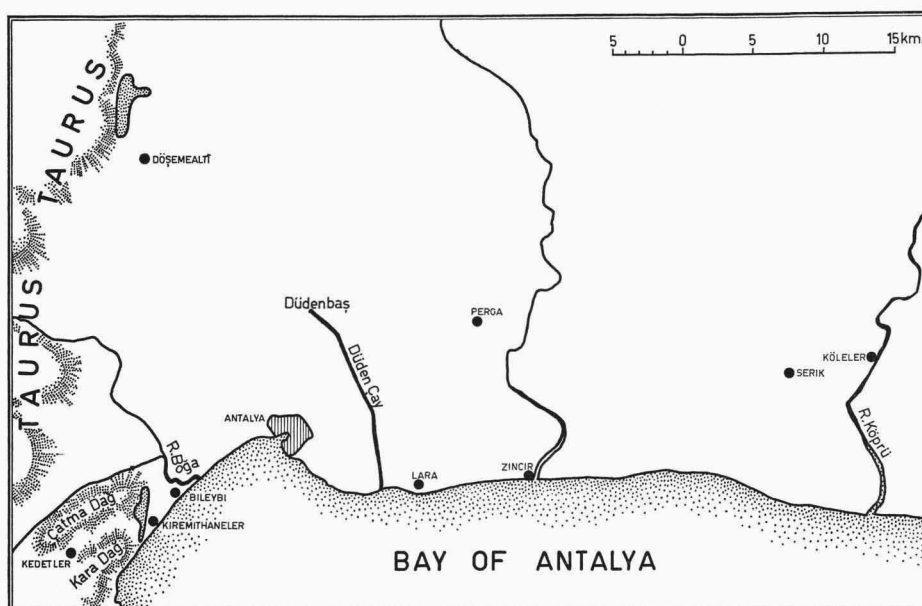


Fig. 3. Detailed map of Antalya and surroundings.

A few times we visited the coast near Lara south-east of Antalya. On the coarse sand of the beach no less than 14 flowering species of plants were collected, all adapted to this extreme habitat. Slightly higher on, the vegetation consists of scattered *Pinus* sp. with a scanty undergrowth, merging into a wood further inland.

Moreover we went collecting near the village of Bileybi south-west of Antalya, at the mouth of the Boğaz, where the landscape consists of river dunes, some backwaters and marshes. Shrubs were observed on small islands in a dry river-bed. A similar area near Kiremithaneler, a village at the foot of the Taurus, showed among other things a pool on the beach and cut-off backwaters with *Iris* sp., *Cladium* sp. and *Phragmites communis*, among which numerous aquatic turtles, fishes, shrimps and leeches were found.

All along the Bay of Antalya fresh water from the Taurus is brought down by springs, numerous rivers and brooks, often ending in cascades. The result of this is that on top of the very clear and relatively salt (34⁰/₀₀) seawater a layer of fresh water is found which locally attains a thickness of some decimeters. Therefore in the narrow tidal zone both flora and fauna are very poor. In quiet weather the layer of freshwater can be observed far out at sea.

The shore is generally rocky with local coves; the stones varying from boulders (west of Antalya) to shingle and coarse sand (Lara) or finer sand (Kiremithaneler, Selimiye). Collecting was only really successful on the Side peninsula (Selimiye), where *Posidonia*-fields occur in salt water, but here also springs of freshwater were observed among breakwaters of conglomerate rocks in the former harbour of the old Roman city, the ruins of which are the only remains. The algae vegetation was strikingly rich.

During a trip by fishing-boat from the harbour of Antalya to the south-east, fishes and crustaceans were caught in abundance on a sandy bottom 1-2 km off the coast between Lara and Zincir. Fishing was done by trawl.

The marshes near the village of Döşemealtı at the foot of the Taurus are fed by cold water flowing from the rocks. The lake contained large amounts of fish, snails, leeches, shrimps and snakes and the area was very rich in birdlife.

Here too the surroundings are grazed to full measure: the dromedaries and buffaloes use to wade and swim as far as the middle of the lake in order to feast upon the leaves of *Nymphaea* sp.

During a few days we visited the fertile plateau south of Elmalı. Our tents were pitched at an altitude of 1100 m on the southern bank of Lake Avlan. The slopes around the plain are for the greater part covered with woods, consisting of *Cedrus libani* and *Thuja* sp. The lichens draping the *Cedrus* trees are very conspicuous; we noted *Alectoria* sp., *Parmelia furfuracea* and *Letharia vulpina*.

Part of the stock-farming population in the south and west of Turkey leads a nomadic life; people live in large family-tents, spend the winter in the lowlands and migrate in spring into the mountains where the woods suffer from the consequences of the serious shortage of pasture land. Notwithstanding the vastness of the woods near Lake Avlan there was not a single tree without damage. Often parts had been chopped out of the trunk and branches were missing; century-old cedars had been felled, apparently for no purpose at all, the trunks were left decaying on the ground.

We climbed the mountain on the south of the lake where, at an altitude of about 2000 m, many flowering bulbous plants were observed on the edges

of melting sheets of snow. During these days the nomads with their herds also began to arrive at this altitude, so that we were just in time to enjoy an undamaged vegetation.

LOCALITIES AND COLLECTION NUMBERS

Province of Antalya:

Antalya, altitude 0-100 m,

Bahçeli Evler and surroundings — 5/4/59 V 18; 6/4/59 S 14, dW 65-89; 7/4/59 dW 90-97; 8/4/59 S 18-19, V 29; 10/4/59 dW 250-259; 11/4/59 H 30, S 22, 31, dW 260-302; 13/4/59 S 25, dW 305-309; 14/4/59 S 30, dW 327, 369; 17/4/59 S 39; 18/4/59 S 45, dW 458; 19/4/59 V 44 (at night at lamp); 21/4/59 S 57, dW 527-538; 23/4/59 dW 631; 25/4/59 dW 597; 27/4/59 dW 685-686, 688; 0/4/59 H 19-21, 31-33, 63-64, 103, V 62; 3/5/59 S 68, dW 828-829;

on city walls near harbour — 6/4/59 V 19; 10/4/59 S 36; 12/4/59 dW 303-304; 19/4/59 S 46; 21/4/59 dW 525-526;

in harbour — 10/4/59 S 21 (depth 5-20 cm); 19/4/59 H 65, S 47 (depth 0-50 cm); 0/4/59 V 78 (depth 0-160 cm);

brought in by fishermen from just off the coast — 12/4/59 S 23;

in pond of city park — 12/4/59 V 31.

Lara, altitude 0-50 m,

in sea, on and under stones and among algae (depth 0-50 cm) — 8/4/59 H 29, S 12, 16, 20, V 21, 22, 24;

washed ashore on beach — 8/4/59 V 20; 16/4/59 V 37;

on coarse sandy beach — 8/4/59 dW 212-213; 16/4/59 dW 432-444;

in coastal dunes with scattered *Pinus* vegetation — 16/4/59 H 28a, S 33, 43, V 38, dW 420-431;

in halfopen *Pinus* wood of some 60 years old — 16/4/59 dW 413-419;

along road, on and near neglected fields — 8/4/59 dW 200-211;

on flooded field — 16/4/59 S 34, V 39;

on recently emerged field — 8/4/59 dW 165-175;

on stony, dry slopes with small streams — 8/4/59 H 14-15, S 13, V 25, 27, dW 176-199;

on wall — 8/4/59 H 22-28, V 26;

under moss in cascade along coast — 8/4/59 S 24.

Kiremithaneler, altitude 0-100 m,

plain between Çatma Dağ and Kara Dağ (mountains) — 7/4/59 S 15, dW 122-143, 147-164; 22/4/59 S 54;

E slope Kara Dağ — 22/4/59 dW 598-612, 618-622;

in brook — 7/4/59 S 17, V 28; 18/4/59 V 42;

in well — 13/4/59 V 33;

in and near dry river-bed — 7/4/59 dW 98-121, 144-146;

in marsh-vegetation — 26/4/59 V 76-77, dW 810-811, V 83-84 (at night at lamp);

under *Pinus* — 22/4/59 H 16-18, 73, dW 539-596;

in and around pool on the beach with vegetation — 22/4/59 S 55, dW 613-617; 25/4/59 V 63-64, 82;

sieved from beach sand — 22/4/59 S 58;

against rocks in sea (depth 0-2 m) — 22/4/59 H 72, S 56.

Kedetler, altitude 300 m, 13/4/59,

in *Pinus* wood on SE slope of mountain — H 16-18, 40-58, 75a, 76a, S 26-27, V 32, dW 310-322.

Antalya, 4 km E of experimental citrus-station and surroundings, altitude 60 m,

- on dry, very calcareous soil with many small streams — 13/4/59 S 28, V 30; 14/4/59
H 59-62, S 29, dW 323-326, 328-368, 370-372.
- Düdenbaşı, where Düden Çay emerges, altitude 100 m, 15/4/59,
in brook — H 34-36, 38-39, S 32, 35, V 35-36;
along brook — H 37, S 32, 35, V 34, dW 373-394;
among fields in plain — S 35, dW 395-410.
- Fall Düden Çay, altitude 60 m, 16/4/59,
surroundings of fall — dW 411-412.
- Bileybi,
mouth of Boğa — 18/4/59 S 44, dW 445-457; 26/4/59 dW 687.
- Lake near Döşemealtı, altitude 300 m, 20/4/59,
in lake — H 66-67, 70, S 51, V 49-57;
on bank — H 68-69, S 52, V 43, 45-48, 58-61, dW 498-524.
- Antalya, rocky shore 4 km W of —, 21/4/59,
in sea (depth 0-1 m) — H 71, S 53.
- Selimiye (ruins of the old Roman town of Side), altitude 0-20 m,
on and under stones and *Posidonia* near former harbour (depth 0-1 m) — 23/4/59
H 74, 76, 106-125, S 60, V 74; 4/5/59 S 71-72;
sieved from sand (depth 10-70 cm) — 23/4/59 & 4/5/59 V 75;
caught by fishermen not far off the coast (depth 10 m at most) — 23/4/59 S 61;
among stones near water line — 3/5/59 S 69;
in jetsam — 23/4/59 V 81; 3/5/59 S 70;
on beach and dunes — 23/4/59 dW 672-675; 4/5/59 dW 849-862;
among ruins — 23/4/59 H 75, 77, dW 639-640, 642-666, 676; 4/5/59 S 73; 5/5/59 dW
809, 863-876;
in swampy places beyond beach — 3/5/59 dW 844-848;
on flowering shrubs — 23/4/59 V 70;
under stones — 23/4/59 V 71, 80.
- Manavgat, altitude 50 m,
along road Manavgat-Selimiye — 23/4/59 V 72, dW 623-624;
on beaten, grassy spot — 23/4/59 dW 677-678; 5/5/59 V 101;
in fertile hedgerows — 23/4/59 dW 679-684.
- Köleler, altitude 50 m, 23/4/59,
in city ruins of Aspendus — dW 625-630, 632-637, 641;
on flowering shrubs — V 69;
along Köprü Irmak (river) — dW 638.
- Perga, altitude 80 m, 23/4/59,
in city ruins — S 62, V 66-67, dW 667-671;
in pools — V 68.
- Perga, Köleler and Selimiye, altitude 0-80 m, 23/4/59,
caught in insect-net — V 65.
- Mediterranean, 10-18 km SE of Antalya, 25/4/59,
trawled from fine sandy bottom (depth 15-20 m) — S 63.
- Avlan, altitude 1100 m,
along Avlan Gölü (lake) — 28-30/4/59 H 85, 100-101, V 85-87, dW 750-774, 812,
815-817;
on rocks with strongly grazed, but closely packed vegetation — 28/4/59 S 64;
on mountain slope — 28/4/59 dW 689-713;
on wooded slopes (altitude 1200 m) — 28/4/59 dW 714-749;
in *Cedrus* wood (altitude 1100-1700 m) — 29/4/59 H 82-84, 86-98, V 89-90;
on N slope with *Cedrus* (altitude 1800 m) — 29/4/59 H 99, dW 775-793, 814, 818-819;
Avlan, 2 km SW of —, altitude 1300 m, 29/4/59 — S 65.
- Elmalı, 5 km S of —, Düden (fall) of the Karagöl, altitude 1000 m, 30/4/59,

- on loamy spot with scanty vegetation — S 66;
 in Düden — H 78-81, 102, 105, V 88.
 Elmalı, 12 km NE of —, altitude 1150 m, 30/4/59,
 on dry, loamy plain with scanty vegetation — S 67, dW 794-801, 808.
 Korkuteli, along road Elmalı-Antalya, altitude 1000 m, 30/4/59,
 among shrubs — H 104, dW 802-807, 813, 820-827.
 Antalya, 50 km E of —, between Serik and Manavgat, altitude 50 m, 3/5/59,
 in cornfields — S 68a, dW 830-843.

5. ANTALYA-MERSIN (May 5th-8th)

On the road to Mersin, during the strenuous passage of the Taurus mountains, we were again struck by the alarming destruction of the conifers; they were often stripped of practically all branches. At the northern foot of the Taurus in the immediate vicinity of Lake Beyşehir, with its abundance of fish, we observed extensive fields of flowering *Leucojum*. The scenery between Beyşehir and Konya consists chiefly of bare hills.

East of Konya for nearly 200 km we passed through the absolutely flat, tree-less scenery of the Anatolian plateau. In a supposedly temporary loamy pool Phyllopod crustaceans belonging to *Triops cancriformis* (Bosc) were observed.

The steppe-plateau, with an average height of over 1000 m, bounded by the places Çorum, Eskişehir, Konya and Kayseri, has the lowest figure for precipitation for the whole of Turkey (200-400 mm, only 30-40 days of rain, practically confined to the spring). The average temperature for January is -2° C, for July 24° C. The characteristic salt-lakes of this plateau are fed chiefly by melting snow from the Taurus, which at the southern side borders the plain like an inaccessible wall with its snow-covered summits of 3000 m.

LOCALITIES AND COLLECTION NUMBERS

Province of Antalya:

- Akseki, S of —, altitude 1200 m, 5/5/59,
 in brushwood — V 98.
 Akseki, 15 km N of —, altitude 1200 m, 5/5/59,
 on E slope — H 126, dW 877-880.

Province of Konya:

- Akseki, 50 km N of —, altitude 1400 m,
 in temporary brook — 5/5/59 H 127, V 93;
 on grassy slopes — 5/5/59 S 74a, V 92, dW 881-888; 6/5/59 dW 889-908.
 Beyşehir, 33 km S of —, altitude 1250 m, 6/5/59,
 moist valley with small streams — H 128, V 96, 118, dW 909-927.
 Beyşehir, 5 km SW of —, Beyşehir Gölü (lake), altitude 1100 m, 6/5/59,
 on bare stones of sandy beach — V 94;
 under stones — S 74;

- in small swamp — V 100;
 among *Iris* vegetation — V 107;
 on shore of and in swamps along lake — H 128b, V 111, 116, dW 928-939.
- Konya, 35 km W of —, altitude 1500 m,
 on very bare slopes with small dwarf-shrubs — 6/5/59 V 112 (at night at lamp);
 7/5/59 H 129, V 99, dW 940-941.
- Konya, altitude 1000 m, 7/5/59,
 in city park — V 114, dW 942.
- Konya, 50 km E of —, altitude 1000 m, 7/5/59,
 on steppe — S 76;
 in loamy pool — S 75, V 109, dW 943-946.
- Ulukışla, 25 km W of —, altitude 1200 m, 7/5/59,
 on ungrazed road-side — V 102, dW 993-1020.

Province of Niğde:

- Ulukışla, 7 km E of —, altitude 1400 m, 8/5/59,
 on dry loamy soil — S 77, V 105, dW 947-953.

Province of İçel (Mersin):

- Çiftehan, altitude 1000 m, 8/5/59,
 flying over road — V 106;
 in clear, ice-cold spring in precipice — V 95.
- Pozanti, altitude 1100 m, 8/5/59 — H 133, dW 954-965.
- Pozanti, 4 km SW of —, altitude 1100 m, 8/5/59,
 under stone on moist, calcareous loam — S 78;
 in moist bush — V 115;
 among moss on steep slope with dripping water — H 130-131, V 97;
 in grass on bank of small stream — V 113;
 on calcareous slope — dW 966-992;
 in dry vegetation — V 110.

6. MERSIN (May 8th-23rd)

The Cilician plain south of Adana is still expanding owing to deltaformation by the rivers Seyhan and Ceyhan. Its figure for precipitation varies from 550 to 700 mm (40-50 days with rain, mainly during the winter-months). The average temperature for July is 28° C, for January it is somewhat lower than that of Antalya (7° C). Nevertheless there is some cultivation of semi-tropical fruits in favourable places. For the rest, corn and cotton are grown quite intensively. Just in these days the corn turned yellow and locally the harvest was in progress.

The coast near Mersin consists of sand and, locally, sandstone. The pier was still too new to yield anything remarkable except for an often rich vegetation of *Padina* sp. A diver brought us some stones from a depth of 10 m, dumped there some years ago. They were moderately grown over with molluscs and some solitary corals, moreover the stones were heavily attacked by rock-boring molluscs. We also collected during a trip by fishing-boat up to 5 km south of Mersin.

West of Mersin the shore is more rocky. Just as near Antalya there is a layer of fresh water on top of the sea water.

Near Tarsus we visited an about 25 years old, closed *Eucalyptus*-plantation on clayey soil; the thick undergrowth here consists of *Morus alba*, *M. nigra*, *Ficus* sp., *Rubus* sp., and other plants.

The plain south of Adana consists for the greater part of a treeless and somewhat brackish steppe with local cotton plantations and shifting dunes. The people live in clay huts, clustered together to form small villages. We visited some étangs between Tuzla and Karataş.

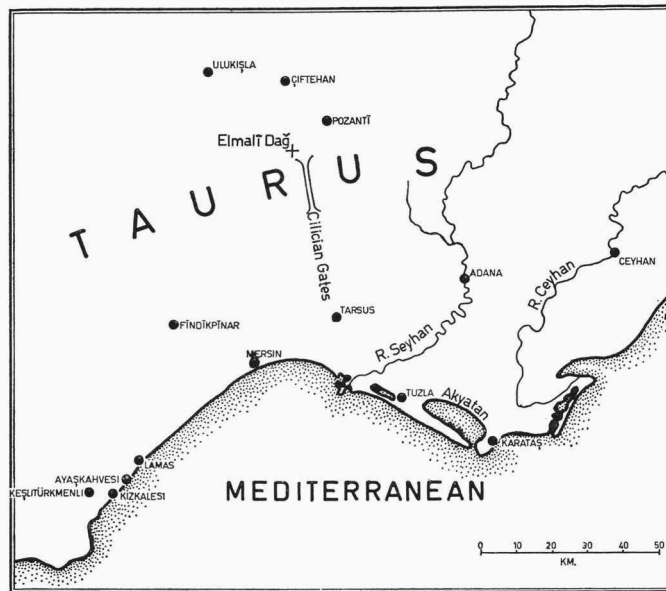


Fig. 4. Detailed map of Mersin and surroundings.

The Akyatan-étang, 16 km long and a few kilometers wide, is connected to the sea by a gully, about 50 m wide, in which, at certain times, fishermen catch *Mugil* sp. by means of an extensive system of stakes.

During a two days trip to the Taurus, in the surroundings of the Cilician Gates we climbed a slope near the northern entrance of the gorge as well as the Elmalı Dağ, more to the north, which is 2523 m high.

At first the woods consist of *Pinus* sp. and *Thuja* sp.; higher on *Abies* sp., *Cedrus* sp. and *Juniperus* sp. dominate. Especially not far from the summit various bulbous plants were found. Just as everywhere in the Taurus, vegetation was seriously damaged: not only were a great many trees badly damaged, but high cedars had been felled without the trunks being used.

LOCALITIES AND COLLECTION NUMBERS

Province of İçel (Mersin):

Mersin, 3 km E of —, altitude 0-5 m,

in dunes near eastern pier and immediate surroundings — 10/5/59 S 79, dW 1021-1035;
16/5/59 dW 1175-1183; 18/5/59 dW 1209-1222; 20/5/59 dW 1309; 21/5/59 dW 1310-
1320; 22/5/59 S 100, dW 1321-1328; 23/5/59 dW 1329-1331; 0/5/59 V 103 (at night
at lamp), V 108;

in brackish pool — 9/5/59 V 104;

on beach — 14/5/59 S 95;

washed ashore on beach — 22/5/59 S 104.

Mersin, harbour,

among algae on pier (depth 0-1 m) — 10/5/59 S 82;

among jetsam on coarse sand — 15/5/59 S 90;

over fine sandy bottom (depth 50-150 cm), at night — 15/5/59 S 89; 22/5/59 S 102;

under pontoon (depth 3 m) — 16/5/59 S 93;

on stones (depth 10 m) — 16/5/59 S 92;

under stones on sand (depth 0-1 m) — 22/5/59 H 163, S 103.

Mediterranean, 5 km S of Mersin, 17/5/59,

fished from sandy bottom (depth 10 m) — S 96.

Mersin, 5 km NE of —, altitude 0-15 m,

on clayey fields — 11/5/59, dW 1044-1071;

on calcareous hill — 22/5/59 S 101.

Mersin, 5 km E of —, altitude 5-10 m,

near clayey ditch — 10/5/59 S 80; 15/5/59 S 94; 23/5/59 dW 1332-1334.

Tarsus, 4 km SW of —, altitude 10 m, 10/5/59,

in ditches in clay with grassy banks and near irrigation ditches — S 81, V 117, 119,
126, dW 1036-1043;

in garden — 15/5/59 dW 1163;

in *Eucalyptus* wood on clay — 15/5/59 V 125, dW 1164-1174.

Keşitürkmenli, altitude 50-100 m, 12/5/59,

in limestone formations near canyons "Heaven" and "Hell" — H 134, V 120, dW
1072-1080, 1119.

Ayaşkahvesi, altitude 0-20 m, 12/5/59,

on peninsula near ruin of Armenian castle, in underwood and cornfields — V 121,
dW 1081-1088.

Lamas, altitude 20 m, 13/5/59,

in quarry near coast — S 86.

Kizkalesi, 12/5/59,

on overgrown rocks in sea (depth 0-1 m) — H 135-146, S 83, V 130;

on sand with loose, decaying algae (depth 1-2 m) — S 84;

in brackish pool on beach — S 85.

Findikpınar (iköy), altitude 1000 m, 14/5/59,

on wooded slopes with undergrowth and on the margins of fields — dW 1120-1162;

on grassy slope with shrubs and rocks — H 147-150, S 87, V 124;

in brook — H 151, S 88.

Mersin, 20 km W of —, between Takanlı and Akarca, altitude 600 m, 14/5/59,

in thin pinewood with dense shrubbery — V 122.

Mersin, 25 km NW of —, altitude 750 m, 14/5/59,

along road and in cornfields with many flowers — V 123, dW 1089-1118.

Cilician Gates, 58 km NE of Mersin, altitude 1100-1900 m, 19/5/59,

at northern entrance of pass, next to western mountains — H 132, 152-156, 162, S 99,
V 128, dW 1223-1284.

Elmalı Dağ (mountain), 15 km SW of Pozantı, altitude 1800-2400 m, 20/5/59,
SE slope — H 157-160, V 129, dW 1285-1308.

Province of Seyhan (Adana):

Tuzla, 17/5/59,

on salt-steppe — V 127, dW 1184-1207;

in Tuzgözü (salt-lake) — S 98, dW 1208 a, b.

Akyatan (étang), 17/5/59,

eastern part (depth 0-1 m) — H 161, S 97.

7. MERSIN-TRABZON (May 23rd-June 1st)

During the next part of the journey which went eastwards, following the drainage-basin of Euphrates and Tigris rivers and through the western part of the Armenian highlands, we collected in a few places in the plain south and east of Maraş, in the catchment area of the River Ceyhan. Some clear brooks are rich in fish, shrimps etc. Other waters are coloured a reddish brown by the discharge of erosion products. A vast, ungrazed, moist grassland, probably used for hay-making, showed a wealth of flowering plants. It struck us that only the eastern sides of the plains between Maraş and Elâziğ are green and that the rest as well as the hills are bare and without trees.

Then we crossed the Euphrates, a wide and swift-flowing river, which carries such a load of erosion products that its colour is a chocolate-brown.

South of Elâziğ our road took us across the divide between the drainage-basins of Euphrates and Tigris. In the bare mountains near Ergani during some hours of the night we collected more moths than at any other time during our trip.

The plateau between Ergani and Diyarbakır is remarkably green and locally even well-cultivated. We collected in the water and on the marshy banks of one of the small tributaries of the Tigris. Here we were near the Syrian frontier in the northernmost part of the area occupied by the Kurds. Climatologically this area is not very different from the Anatolian plateau (average temperature in January 1° C, in July 31° C, precipitation 400-500 mm annually).

From here we went into a northern direction, right across the western spurs of the Armenian highlands. Precipitation figures for this area, south of the Eastpontian mountains, vary from 400 to 800 mm. All through the year, however, the temperatures are some centigrades lower than in the adjacent Anatolian plateau (see paragraph 5). Vegetation in this area consists partly of oak brushwood.

LOCALITIES AND COLLECTION NUMBERS

Province of Seyhan (Adana):

- Ceyhan, 15 km E of —, altitude 50 m, 23/5/59,
roadverge and field — V 131, dW 1335-1342.
Haruniye, 3 km S of —, altitude 300 m, 24/5/59,
in pinewood with rich undergrowth and small streams — S 103, V 132, dW 1343-1368

Province of Maraş:

- Fevzipaşa, 25 km W of —, altitude 500-1000 m, 24/5/59,
on slopes with shrubs and small corn-plots — H 164b, V 133, 152, dW 1369-1392.
Maraş, 3 km S of —, altitude 700 m, 24/5/59,
in and near brook with abundant vegetation near Aksu (river) — S 106, V 135.
Malatya, 140 km SW of —, altitude 700 m, 25/5/59,
in swamp with brooks near dry hills — S 107, V 136, (at night at lamp:) V 134,
dW 1393-1402.

Province of Malatya:

- Malatya, 80 km SW of —, altitude 700 m, 25/5/59,
in moist grass-land, no grazing — S 108, V 137, dW 1403-1414.
Malatya, altitude 900 m, 25/5/59,
on dry slope — dW 1415-1420.
Malatya, 15 km E of —, altitude 1000 m, 25/5/59,
on bare talus — dW 1421-1430.

Province of Elâziğ:

- Kale, 15 km NE of —, near bridge over Fırat (Euphrates), altitude 600 m,
26/5/59, V 140, dW 1431-1452;
at night at lamp — 25/5/59 S 113, V 138;
washed up on riverbank — 25/5/59 V 156.
Elâziğ, 30 km SW of —, altitude 1200 m, 26/5/59,
on bare, stony slopes — dW 1453-1460.
Elâziğ, 15 km SE of —, altitude 1100 m, 26/5/59,
in moist *Populus* bush with brook — S 109, V 154, dW 1461-1464.
Elâziğ, 25 km SE of —, Hazar Gölü (lake), altitude 1150 m,
on northern bank — 26/5/59 S 110, dW 1465-1468; 28/5/59 V 155, dW 1546-1547;
in dense *Chara* vegetation — 29/5/59 V 158.
Maden, 2 km S of —, altitude 1100 m, 27/5/59,
on N slope — dW 1513-1545.

Province of Diyarbakır:

- Ergani, 5 km NW of —, altitude 1200 m,
in practically bare, rocky hills with small brook — 26/5/59 V 139 (at night at lamp)
27/5/59 H 164a, S 111, dW 1469-1481.
Ergani, 20 km SE of —, altitude 900 m, 27/5/59,
in brook — V 153.
Ergani, 38 km SE of —, tributary of the Dicle (Tigris), altitude 700 m, 27/5/59,
in river and in undergrowth and grassland along banks — S 112, V 141, dW 1482-1512.

Province of Tunceli:

- Pertek, 7 km SW of —, near bridge across Murat, altitude 1200 m, 28/5/59,
on rather grassy bank with some rocks — H 164d, V 142, dW 1548-1559.
Pertek, 10 km NE of —, altitude 1800 m, 28/5/59,

- on dry slope with calcareous sand — V 144, dW 1560-1584.
 Tunceli, 30 km S of —, altitude 1700 m, 28/5/59,
 on grassy spot — V 160, dW 1585-1592.
 Tunceli, 15 km NE of —, altitude 1400 m, 29/5/59,
 on slope with *Quercus* brushwood — V 143, dW 1593-1614.
 Pülümür, 5 km N of —, altitude 2000 m, 29/5/59,
 on marshy grass slope with stones — S 114, dW 1615-1658.

Province of Erzincan:

- Erzincan, 40 km W of —, altitude 1200 m, 29/5/59,
 along road — dW 1659-1660.
 Erzincan, 15-20 km NW of —, altitude 2000 m,
 in moist meadow on mountain — 29/5/59 S 115, V 145-146, dW 1661-1673; 30/5/59
 dW 1674-1692.

Province of Gümüşane:

- Kelkit, altitude 500 m, 30/5/59,
 on loamy soil with stones — S 116.
 Gümüşane, 13 km SE of —, altitude 1400 m, 30/5/59 — dW 1693-1697.
 Gümüşane, 5 km E of —, altitude 1200 m,
 on calcareous hills along river, much grazing — 30/5/59 V 147 (at night at lamp);
 31/5/59 H 164c, V 148, dW 1698-1704.
 Gümüşane, 5 km W of —, altitude 1200 m, 31/5/59,
 under stones — V 157.
 Zigana, 20 km NW of Gümüşane, altitude 1700 m, 31/5/59,
 on grassy W slope — V 149, dW 1705-1712.

8. TRABZON (June 1st-10th)

Immediately north of Gümüşane we started to cross the northernmost chain of the Eastpontian mountains by way of a pass of over 2000 m high. In this altitude there was still some snow left, a few hundred metres lower down the hills were yellow in places with flowering *Azalea pontica*. We also found *Rhododendron ponticum*.

The descent to Trabzon brought us through lovely conifer woods with a lot of deciduous trees. Still lower down the fenced-in hazel plantations offered an abundance of plants, e.g. various species of orchids. Quite in contrast to the situation near Antalya and Mersin the Eastpontian mountains continue without a break all the way to the Black Sea; no coastal plain is formed here. Characteristic for this shore are the exceptionally numerous brooks and rivulets, which have cut deep, funnel-shaped valleys into the cliffs at the shore, with coves of sometimes absolutely black sand at their mouths.

Northern winds are prevailing in all months of the year for this area. When ascending against the mountains (with summits of 3000-4000 m) they cause abundant rain, so that in the surroundings of Trabzon and Rize the highest figures for precipitation in Turkey are registered (1200-2500 mm, 130-170 days with rain). Moreover the precipitation is here more equally

distributed over the year than elsewhere. Temperatures are more or less similar to those at the Mediterranean coast near Adana (see paragraph 6),

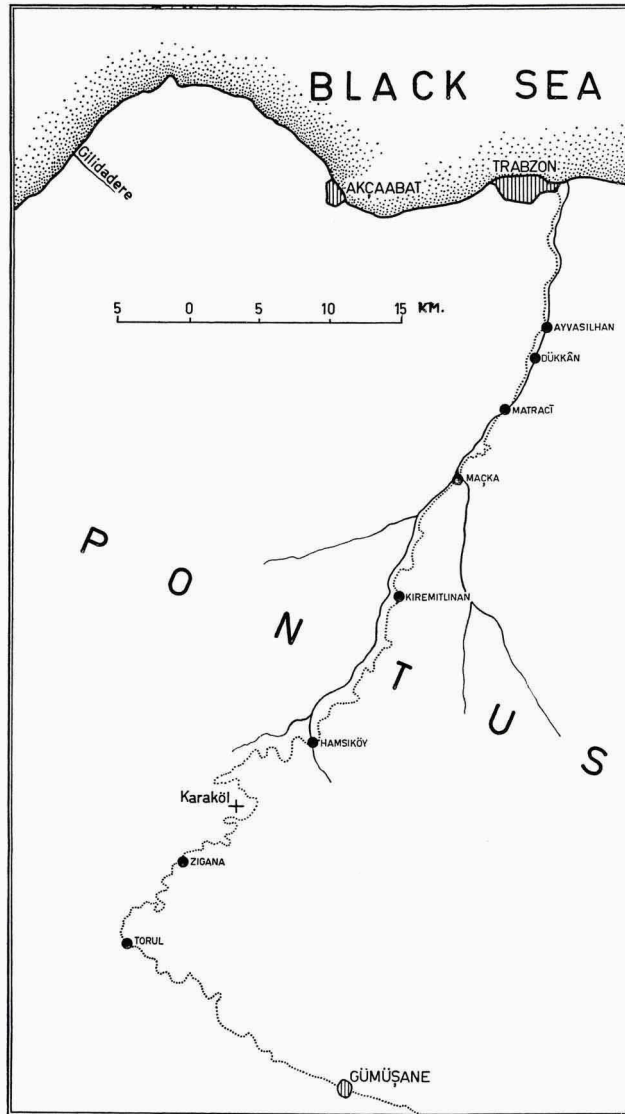


Fig. 5. Detailed map of Trabzon and surroundings.

however, summers are cooler (average January temperature 7°C , July temperature 23°C).

Near the mouths of the numerous rivulets discharging into the Black Sea,

the water was coloured brown by erosion products all the way down to the coast and far out into sea. The extremely heavy rainfall had done a lot of damage. This is one of the causes of the serious pollution of the beach, where at night the jackals (*Canis aureus*) and by day the ravens (*Corvus corax*) are feeding.

It turned out that, notwithstanding a richly developed vegetation of algae (*Cystoseira* sp., *Ceramium* sp., etc.) the sea is definitely poor in species, as was to be expected for this brackish habitat. Moreover it is remarkably poor in individuals, a phenomenon for which we can not find any further explanation.

During two days, in a practically continuous rain we made a trip to the woods south of Maçka. These consist chiefly of *Fagus* sp., *Corylus* sp. and *Picea orientalis* with a rich undergrowth of *Paris* sp., *Actaea* sp., *Aquilegia* sp., *Fragaria* sp. and some orchid species. Remarkable epiphytic lichens are *Usnea* div. spp. and numerous crustaceous species, especially on *Fagus* sp.

LOCALITIES AND COLLECTION NUMBERS

Province of Trabzon:

Karaköl (Zıganakordonu), altitude 2225 m, 31/5/59,

on mountain meadow to N side of pass — H 166-167, V 150, dW 1713-1736

Matraç, altitude 200 m, 1/6/59,

in hazel plantations — H 164, S 117, V 151, dW 1737-1741.

Ayvasilhan, altitude 300 m, 6/6/59,

in moist deciduous wood — V 168.

Trabzon, altitude 10-50 m,

on old city wall — 2/6/59 V 159, dW 1742-1746; 4/6/59 S 120.

Trabzon, sea near harbour,

depth 0-5 m — 1-7/6/59 S 119, V 164;

scratched from wall (depth 30-60 cm) — 1-7/6/59 V 161;

washed ashore — 1-7/6/59 V 163;

pelagic, at night at lamp — 7/6/59 S 126;

depth 0-1.5 m — 8/6/59 S 129;

dredged off harbour (depth 12 m) — 8/6/59 S 128;

near fishmeal factory — 7/6/59 S 125; 9/6/59 S 130; 1-10/6/59 V 162, dW 1873.

Trabzon, 2 km S of —, altitude 10 m, 4/6/59 — S 118, V 165 (at night at lamp).

Trabzon, 5 km S of —, altitude 250 m, 8/6/59,

on grassy land with stones — S 127, dW 1874-1897.

Trabzon, 8 km W of —, on the shore, 4/6/59,

in fresh water pool — S 121;

in trench — V 169.

Akçaabat, 5 km NW of —, 4/6/59,

on stony beach and in grassy spot on shore — S 122, dW 1747-1756;

at sea (depth 0-2 m) — H 168, S 123.

Akçaabat, 13 km NW of —, 4/6/59,

on shore, on moist rocky shore and in river delta — dW 1757-1785.

Hamsiköy, 3 km S of —, altitude 1750-1900 m, 5/6/59,

- in moist wood with *Picea* and *Fagus* on slope — H 169a, S 124, V 166, dW 1786, 1837-1872.
Dükkân, altitude 400 m, 6/6/59,
on steep, dry face of rock — V 170.
Kiremitlinan, altitude 1600 m, 6/6/59,
on grassy slopes with hedgerows — H 169b, V 167, 171, dW 1787-1836.

9. TRABZON-ISTANBUL (June 10th-22nd)

To get to Istanbul by way of Ankara we followed the road along the Black Sea as far as Samsun. In so far as the intensively cultivated northern slopes of the Eastpontian mountains were not in use for hazelcultivation, the vegetation looked luxuriant: ferns of a height of several meters and *Rhododendron* sp. grew among *Alnus* sp. and *Corylus* sp.

In Samsun we collected on the western side of the new western pier. The sea proved to be considerably richer in animal life here than around Trabzon.

Here we left the shore to proceed to Ankara and soon the scenery changed drastically: we were now in the northernmost part of the Anatolian plateau (for climatological data see paragraph 5).

We collected on the banks of the River Sakarya, 90 km south-west of Ankara. A fair number of fish and freshwater turtles were found living in this swiftly flowing river which is 15-20 m wide and some meters deep. Near the banks we found *Myriophyllum* sp., *Potamogeton* sp., *Vaucheria* sp. and *Cladophora* sp. Stones and branches in the water were thickly overgrown with the red alga *Laurentia* cf. *obtusata*, which perhaps may be regarded as a marine relict from a former geological period, in which the present Anatolian plateau was still at the bottom of the sea.

Between Eskişehir and Bursa the Anatolian plateau merges into the coastal area of the Bosphorus and the Sea of Marmara (see paragraph 3 for climatological data).

Near Bursa a two days visit was paid to the Olymp of Asia Minor, the Ulu Dağ (altitude 2327 m). At the foot of the mountains we found a number of plants which are regular garden species at home. In the wood on the slopes we could distinguish three zones, viz. of *Quercus* sp., of *Pinus nigra*, and of *Abies* sp. On the border of the two last zones there was a dense local forest of *Fagus* sp. Next to the snow several bulbous species, a.o. *Crocus* sp., were still flowering on June 20th.

By way of the shore of the Sea of Marmara which at that place turned out to be remarkably poor in animal life, we went on to Lake Iznik (Lake of Nicaea). In a swamp situated on the western bank, with a vegetation of

Phragmites communis, *Cladium* sp., *Typha* sp., *Nymphaea* sp., *Hydrocharis* sp., *Utricularia* sp., *Wolffia* sp. and other plants, a large number of birds were observed. When we were wading through this swamp scores of leeches attached themselves to our legs. We had observed these animals regularly when travelling through Turkey, e.g. in drinking wells for cattle.

LOCALITIES AND COLLECTION NUMBERS

Province of Trabzon:

Trabzon, 63 km W of —, altitude 0-20 m, 10/6/59,
in Giliddere (river) and on moist banks — S 131, V 172, dW 1898-1907.

Province of Giresun:

Trabzon, 63 km W of —, altitude 0-20 m, 10/6/59,
in étang near mouth of Göreledere (river) — H 170a, S 132, V 174;
in bush — dW 1908-1910;
in trench along road — S 133.
Tirebolu, altitude 20 m, 10/6/59,
among ferns along road — H 170b, c, V 173.
Tirebolu, 2 km W of —, Kilese Burun (bay), 10/6/59,
on rocks in the sea (between + 1 and - 1 m) — H 170, S 134;
on slope and on beach — S 134a, dW 1911-1922.
Giresun, 11/6/59,
in hazelwood — dW 1923.

Province of Ordu:

Ordu, 11/6/59,
on beach among jetsam — S 135.
Fatsa, 5 km NW of —, altitude 10 m, 11/6/59,
in pool along road — S 136, dW 1924-1925.
Ünye, 11/6/59,
scratched from poles of jetty in harbour — S 137.
Ünye, 7 km W of —, Curiköyü, 11/6/59,
in and around old arm of a river recently cut off from the sea — S 138, V 175, dW
1926-1927.
Ünye, 12 km W of —, Akçaydere (river), 11/6/59,
along river — dW 1928.

Province of Samsun:

Samsun, 10 km SE of —, crossing of mainroad and railway, altitude 10 m, 11/6/59,
in pool — S 139, dW 1929.
Samsun, 5 km SE of —,
on steep slope with many trees by the seaside — 11/6/59 S 140, dW 1930-1938, (at
night at lamp:) V 176;
over deep trench — 12/6/59 V 177;
on boulders in splash zone — 12/6/59 V 178.
Samsun, 12/6/59,
near harbour and surroundings — dW 1939-1940;
on boulders (depth 0-2 m) — H 170d, S 141;
sieved from beach sand (depth 0-50 cm) — S 142;
washed ashore on beach — V 179.

- Samsun, 2 km S of —, altitude 100 m, 12/6/59,
on dry, grazed grassland — V 181.
Kavak, altitude 500 m, 12/6/59,
in brook — S 143;
along brook — V 180, dW 1941-1942.

Province of Amasya:

- Havza, 13 km SW of —, altitude 1000 m, 13/6/59,
along road — V 183, dW 1943-1958.

Province of Çorum:

- Çorum, 10 km NE of —, altitude 1000 m, 13/6/59,
in fields with moist trenches — V 182.
Çorum, 15 km SW of —, altitude 1100 m, 13/6/59,
near brook — V 184.
Boğazkale, altitude 1400 m, 13/6/59,
on rock — V 185.
Boğazkale, 5 km NW of —, altitude 1400 m, 14/6/59,
in plain with rushes — V 187, dW 1959-1962.
Sungurlu, 15 km SW of —, altitude 1500 m, 14/6/59,
on dry, loamy roadside shoulder — H 170e, dW 1963-1975.

Province of Ankara:

- Ankara, 50 km E of —, altitude 1100 m, 14/6/59,
along road — dW 1976-1977;
in crystal-clear fountain with icecold water — V 186.
Ankara, 30 km SW of —, altitude 1100 m, 17/6/59,
on dry, calcareous, grassy soil — V 188.
Ankara, 50 km SW of —, Temelli (Samutlu), altitude 1200 m, 17/6/59,
along road — S 144, dW 1978-1979;
in thatched roof of clay cottage — V 189.
Polatlı, 20 km SW of —, Sakarya (river), altitude 800 m, 17-18/6/59,
spot where the road crosses the river — H 170f, S 145, V 190-192, dW 1980-1998.
Polatlı, 25 km SW of —, altitude 800 m, 18/6/59,
on saline plain — dW 1999-2000.

Province of Eskişehir:

- Eskişehir, 60 km ESE of —, altitude 1000 m, 18/6/59,
in dry spot along road — V 193, dW 2001-2007;
in saline pool and in apricot-garden — dW 2008-2012.

Province of Bursa:

- Inegöl, 8 km E of —, near branch of Sakarya (river), altitude 500 m, 18/6/59,
in alder bush — V 194-195, dW 2013-2022;
in river — H 175, S 146.
Bursa, 18 km SE of —, Ulu Dağ (mountain),
on grassy, marshy slopes with boulders and scattered patches of snow (altitude 2000-
2400 m) — 19/6/59 H 172-174, 177, V 197; 20/6/59 S 147, dW 2023-2072;
in *Abies* forest (altitude 1800 m) — 19/6/59 H 171-171a;
in mixed *Fagus-Abies* forest with clearings (altitude 1200-1500 m), 21/6/59 H 176,
178-181, S 148, dW 2073-2079, 2095-2097;
along road (altitude 800-1200 m) — 21/6/59 V 198.

- Bursa, 8 km SE of —, altitude 350 m, 21/6/59,
in roadside verge — dW 2080-2084.
- Bursa, altitude 300 m, 19/6/59,
on old walls — V 196.
- Gemlik, 3 km SW of —, altitude 50 m, 21/6/59,
on dry rocky slope — dW 2085-2086.
- Gemlik, 21/6/59,
in sea along shore (depth 0-2 m) — H 186a, S 150, V 199.
- Gemlik, 1 km NE of —, altitude 50 m, 21/6/59,
in and near brook — S 149, V 200.
- Iznik Gölü (lake), altitude 80 m, 22/6/59,
in swamp near western bank — S 151, V 203, dW 2087-2094;
on dry, sandy bank between lake and swamp — S 152, V 201.

Province of Istanbul:

- Yalova, 22/6/59,
in small stream on beach — S 153;
washed ashore — V 202;
on stones and timber in sea (depth 0-2 m) — S 154.

10. ISTANBUL-HOLLAND (June 27th-July 11th)

After a stay of some days in Istanbul (see paragraph 3) we arrived in Greece by way of the Turkish frontier place Edirne. Here we collected in a wonderful étang-region near Porto Lagos, situated on the Aegean Sea between Alexandroupolis and Kavalla. As compared to the sea around Turkey, this sea is remarkably rich in animal life.

During the rest of journey home, over Thessaloniki, Skopje, Beograd, Zagreb, Rijeka, Triëste, Padua, Trento, Innsbruck and München we collected regularly, though on a smaller scale than in Turkey.

LOCALITIES AND COLLECTION NUMBERS

Province of Istanbul:

- Istanbul-Edirne, 27/6/59,
collected on highway — V 206.

Greece:

- Soufli, 10 km S of —, 27/6/59,
in and near tributary of Maritsa (river) — S 158;
on dry, rough roadside shoulder and on hills — V 207, dW 2123-2128.
- Komotini-Porto Lagos, 28/6/59,
under stones in poor grass-land — V 210.
- Porto Lagos, Bourou Lago (étang), 28/6/59,
near eastern bank — H 182-183, S 159, V 208.
- Porto Lagos,
washed ashore on beach — 28/6/59 V 209;
in and near harbour (depth 0-2 m) — 29/6/59 H 184, S 160.

Xanthi, 10 km SW of —, Nestos (river), 29/6/59,
on river bank — S 161.
Thessaloniki, 16 km E of —, Lago Koronia (lake), 29/6/59,
in shallow southern margin of lake — S 162, V 211;
along southern bank — dW 2129-2131.

Jugoslavia:

Thessaloniki, 70 km NW of —, 30/6/59,
on dry bank of tributary of Vardar (river) — dW 2132-2133.
Vazarci, 75 km SE of Skopje, 30/6/59,
in tributary of Vardar (river) — S 163.
Crna Reka, 65 km SE of Skopje, 30/6/59,
near tributary of Vardar (river) — V 212.
Arzenicani, 20 km SE of Skopje, 1/7/59,
in moist meadow near river — V 213, dW 2134-2135.
Džep, 65 km S of Niš, 2/7/59,
on slope with *Carpinus*, *Rubus* etc. along Morava (river) — dW 2136-2141.
Beograd, 80 km WNW of —, 3/7/59,
in swamp and in fields — S 164, V 214, dW 2142-2145.
Zagreb, 90 km SE of —, 4/7/59,
in *Quercus* forest — H 188, V 216;
in small ditch — dW 2146.
Karlovac, 5 km NE of —, 5/7/59,
along and in loampits in *Quercus* forest — S 165, V 215, dW 2147-2151.
Jadranovo, 30 km SE of Rijeka, 5/7/59,
in sea (depth 0-2 m) — H 187, S 166;
in shrubs and grass-lands along shore — V 217.

Italy:

Trieste, 6/7/59 — dW 2152.
Monfalcone, 13 km W of —, 6/7/59,
on banks of Isonzo — dW 2153;
in river — S 167.
Venice, 6/7/59 — dW 2154.