



Senir Stream Nature Reserve

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Welcome to the Senir (Hatsbani) Stream Nature Reserve

The Israel Nature and Parks Authority, together with the Upper Galilee Regional Council, have prepared this nature reserve for visitors. The reserve boasts year-round flowing water, shady riverbank vegetation, colorful blooming plants even at the height of summer, interesting trails of varying degrees of challenge, a spectacular landscape and a relaxed pastoral atmosphere.

Getting to the Reserve

Take road 90 to the Metsudot Junction north of Qiryat Shemona. Turn right (east) at road 99 (Metsudot Road). Drive 4.5 kilometers to the Hagoshrim Interchange and turn north. Follow the signs for about one kilometer through the avocado orchards.

Do not enter the water except in designated places, both for safety and conservation reasons (to protect small forms of life in the water that form the basis for the entire ecological system).

The Stream

The stream's Arabic name, Hatsbani, is the name by which its portion in Lebanon is still known. In Israel, the stream has been given the Hebrew name Senir. The Senir Stream is one of the major sources of the Jordan. It is very different from the Jordan's other two sources, the Dan and the Hermon (Banias) because of its length: It is some 60 kilometers long, beginning far to the north in the Lebanon Valley.

The 640-square kilometer drainage basin of the Senir is narrow – about 10 kilometers wide. It includes the eastern portion of the Lebanon Valley (the western portion of which is drained by the Litani River), and the western portion of Mount Hermon. For most of its length, the Senir is dry and quite steep, heading northeast-southwest, with a few small tributaries. It starts out at 1,550 meters above sea level in the Lebanon Valley, consists of a dry channel for 32 kilometers, and falls 875 meters with an average incline of 2.7%.

At the foot of the village of Hatsbaya (14 kilometers north of the village of Ghajar) at 675 meters above sea level, springs with a discharge rate of approximately 30 million cubic meters per year, known as Naba' al-Hatsbani, emerge from the Hatsbani channel. From this point onward, the springs become a flowing stream known as the Hatsbani Stream. Lebanese farmers have been utilizing these springs, since the mid-20th century.

Near Ghajar, where the Hatsbani enters Israeli territory, the stream burrows through the basalt to a layer of Cenomanian chalk. At this point a powerful, spring, the al-Wazani, emerges at 280 meters above sea level. The al-Wazani has a yearly discharge rate of 4,050 million cubic meters, reaching a high in June of two

cubic meters per second and in October, a low of 1.2 meters per second. In a drought year, the discharge rate falls to half. The villagers of Ghajar and the small Lebanese village of al-Waziya use a small amount of the water for domestic needs; the rest flows downstream all year round.

Further downstream the channel becomes a beautiful canyon with basalt-pillar walls. When the stream reaches the nature reserve, it flows along a plain with low banks 2–6 meters high. The banks consist of alternating deposits of travertine (limey deposits from springs) and basalt boulders. The bottom of the stream channel is also lined with boulders of various sizes. This portion of the stream is approximately 1,600 meters long. Its general direction is south-southwest, with a small number of wide bends descending at a rate of 35 meters.

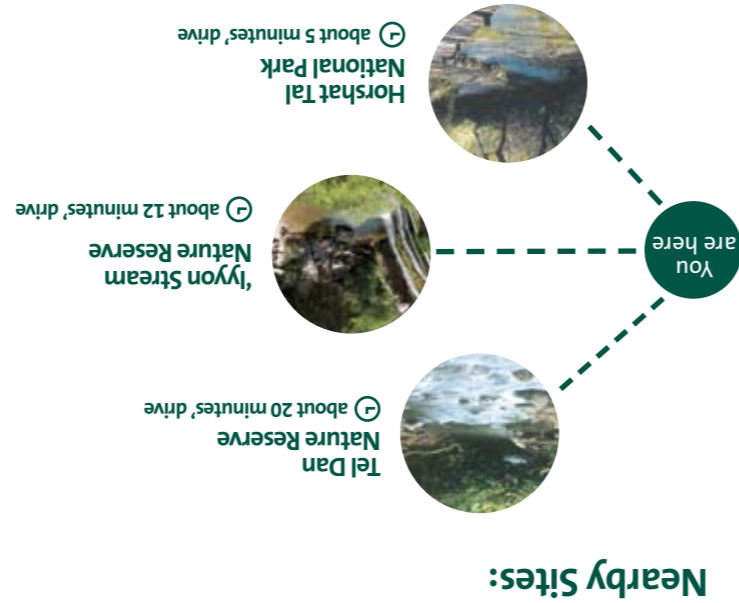
Its incline is 2.2%, slightly less than the incline of the previous portion of the stream, but enough to cause a powerful flow, a sight visitors enjoy. The stream flows straight along with a few falls that provide spectacular scenery. The trail, prepared in the 80s by the then-Israel Parks Authority and the Society for the Protection of Nature along this portion of the stream, reveals the charms of the riparian landscape to visitors.

Road 99 ("the fortress road") passes above the stream on the Senir Bridge, known in Arabic as A-dilb ("plane tree") Bridge. South of this area is the region's rafting kingdom. The stream digs deeply into the valley, between soil banks two to eight meters high. Its general direction is south but it twists and turns along the way. On the outer wall of each bend, the bank is a sheer wall, a habitat for nesting kingfishers (*Alcedo atthis*), rollers (*Loracias garrulus*), and bee-eaters (*Merops aplaster*). Along a four-kilometer stretch, until the confluence of the Hatsbani with the Dan and the Banias rivers near Kibbutz Sde Nehemiah, the stream makes a 25-meter descent, at an incline of 0.6%.

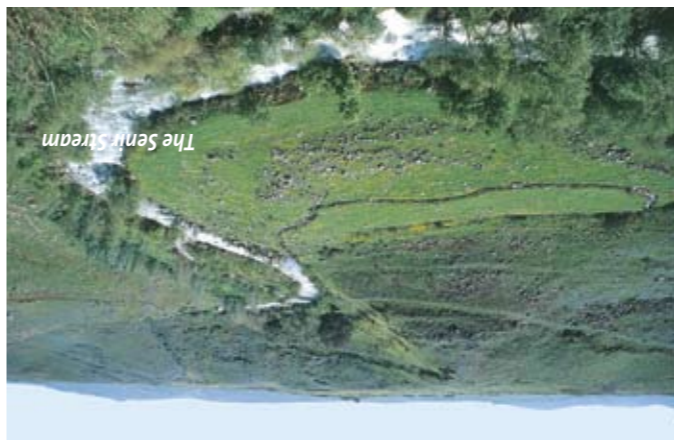
The three sources of the Jordan meet at Sde Nehemiah after the Hatsbani/Senir has traversed 60 kilometers as the crow flies (if we include the bends, the distance is even greater), and has descended nearly 1,500 meters.



Wading pool



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Senir Stream (Hatsbani) Nature Reserve, Tel: 04-6950064



On Friday and holiday eve the site closes one hour earlier.

Opening hours:
Sunday-Thursaday 08:00-17:00
and Saturday 16:00
Entry permitted until:

- Do not harm flora, fauna, or inanimate objects; fishing is prohibited!
- Walk on marked trails only. Be careful of slippery ground!
- Visitors are not allowed in the reserve after closing hours.
- Loud music is prohibited.
- Keep the area clean. Do not burn or bury trash; take it out with you.
- Do not light fires.
- Swimming or jumping into the water is absolutely prohibited!
- Do not go near the edge of the cliff to avoid falling, and do not roll down stones!
- Each person should have three liters of water per day. Do not depend on natural water sources for drinking. Wear walking shoes and a hat.
- Flooding is a danger in winter; follow weather reports. In cloudy weather do not walk in the streams or cross them. Be careful of slippery ground on rainy days.

Safety Directives for Visitors

Please observe these rules:

An annual average of 130 million cubic meters of water pass through the Senir – one-fourth of the Jordan River's water (another quarter is supplied by the Hermon River – the Banias – and half comes from the Dan). The difference between seasons is enormous: at its height, after the strong continual rains of winter, 400 times more water flows in the stream than in the fall of a drought year. During floods, people gather at the bridge for a view of the grandeur of nature, when the muddy stream becomes a deep and mighty river.

Fauna

Most of the large mammals living along the stream banks are generally nocturnal (this is why the reserve closes in the early evening), and are therefore usually invisible to daytime visitors. Still, try not to disturb them as you walk along. From time to time you may spot an Egyptian mongoose (*Herpestes ichneumon*), but the Indian crested porcupines (*Hystrix indica*) leave only their quills behind, and wild boars (*Sus scrofa*) signal their presence with the remains of hair and masticated food. Otters (*Lutra lutra*) and jungle cats (*Felis chaus*) leave only their footprints and droppings.

Kingfishers, egrets (*Ardea cinera*), and a host of songbirds nest along the banks and feed on the flora and fauna.

Did You Know?

The otter is a carnivore of the Lutrinae family and it is an endangered species. It feeds mainly on fish and is usually active after dark.

The Israel Nature and Parks Authority is working to reduce threats to the otter. It has built passages under roads to prevent them from being run over and is monitoring their numbers.

The Senir Stream Nature Reserve hosts public enrichment days with activities to increase awareness of the need to protect otters and other endangered wild animals.



An entire ecosystem is to be found in the water, from algae to single-cell animals that form the basis of the food chain, and fish, mostly Damascus barbels (*Capoeta damascina*).

The creatures most visible to the visitor are the smallest: the amphibians, and the dragonflies, looking like long glowing sticks with large, colorful transparent wings. They fly over the water and stand on twigs protruding from it. They can often be seen during their "bridal" flight, with their bodies oddly twisted. The damselfly (*Calopteryx spp.*) is particularly outstanding for its metallic hues: the male in shades of blue and the female in green. This species

water quality. Consequently the reserve is prone to fires, pollution and impaired

The banks of the Senir Stream are a varied nature reserve, part of the Jordan sources reserve. On the map, the reserve looks like slender fingers lining the streams, which converge at Sde Nehemiah. Farming between the streams uses modern methods including spraying and irrigation, and tourism sometimes results in scattered garbage and fires (due to visitors' negligence).

Nature Conservation

To return to your car, turn east (left) for 50 meters to an unpaved road (bicycle trail). This is a comfortable trail, flat and sunny. If you left your car at Gan Hataston head south (right), along the bicycle trail and walk for five minutes until you reach Gan Hataston. Warning: Do not cross the road; instead, continue right and go under the bridge. If you left your car at the beginning of the trail head north (left) on the trail. A 15-minute walk will bring you back to the parking lot.

This is where the portion of the Israel National Trail along the Senir Stream ends.

Another 10 minutes' walk in the shade will bring you to a sunny, dry segment of the trail. But a few hundred meters farther you'll find the shade and the water's edge again. The stream is wide and deep here – **entering the water is dangerous!**

You start out as on the Green Trail but you don't head back to the parking lot – continue downstream. The level of difficulty farther along is similar to the last few minutes of the Green Trail. We recommend stopping here and there to look back, toward the stream's frothy cascades. Continue walking for five more minutes to reach the path leading to the Dag Al Hadan restaurant.

National Trail colors.

This trail can easily be completed in about an hour and a half or less. It is marked along the way with the orange-blue-white Israel

The Israel National Trail (about 90 minutes)

is very common in the Hula Valley and the Golan, and is found nowhere else in the world except Syria and Israel.

If we look at the leaves of the holy bramble, we will notice they have been bored through in a lacy design. The culprit is a small species of beetle, the chrysomelid (*Altica bicarinata*) metallic green in color.

Land crabs (*Potamon potamios*) can be seen on the ground at the edge of the water and in it. They are an important part of the diet of the noisy white-breasted kingfisher (*Halcyon smyrnensis*).

Flora

Plant life along the stream banks is rich and varied, flourishing "like a tree planted by streams of water" (Psalms 1:3). After one fire, reeds and vines grew back here at a rate of 10 centimeters a day. The plants also excel in their resistance to flooding and the beauty of their blossoms.

Ten different kinds of indigenous trees grow in the reserve, and another eight domesticated species, along with 10 species of shrubs and three species of reeds. The tangle of stream bank vegetation is especially conducive to the growth of 10 different species of vines.

The most common trees in the reserve are the oriental plane tree (*Platanus orientalis*), with its large, hand-shaped leaves and prickly round fruit, and the willow (*Salix spp.*)

The willow has elongated leaves, and its seeds are wind-born aided by a lightweight cottony material which appears later as a translucent white layer on the ground. Both species have impressive trunks and an extended root system, sometimes exposed at points where the soil has eroded in flooding. The red roots of the willow, laid bare at the water line, can clearly be seen.

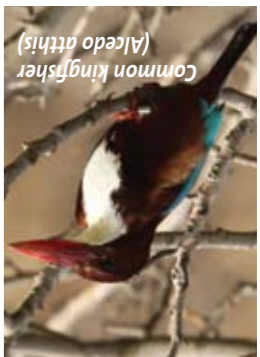
Another plant, with hand-shaped leaves and prickly fruit balls, is the castor-oil plant (*Ricinus communis*), which is said to have shaded the prophet Jonah (Jonah 4:6), although it is uncertain whether this is the plant meant in the verse.

The most common species of reed on the trail is the giant reed (*Arundo donax*), recognizable by its thick stalks and closely packed inflorescence, as opposed to the more diverted inflorescence of its relative, the common reed (*Phragmites australis*). The reeds climb toward the light from the thick vegetation, sometimes as high as 11.5 meters. The most beautiful of all reeds is the sugar cane (*Saccharum spp.*), with its inflorescence gleaming like silk.

Outstanding among the vines is the Greek silk-vine (*Periploca graeca*), a species that grows in Israel only around the Hermon and Senir streams. Its stalks wind and weave together as they



Pied kingfisher (*Ceryle rudis*)



Common kingfisher (*Alcedo atthis*)

grow, sometimes taking on the appearance of a woven rope. When the plant is injured, it exudes a milky liquid containing glycoside, a substance known to increase the heart rate. Its fruits are beautiful and strange, resembling two horns that form a ring.

Another vine, which may be indigenous, is the common grape vine (*Vitis vinifera*), with its edible fruits. The holy bramble (*Rubus sanctus*) fruits are also edible, but watch out for its hooked thorns.

Among the plants with colorful hues in summer are the oleander (*Nerium oleander*), lilac chaste tree (*Vitex spp.*), loosestrife (*Lythrum spp.*), willow-herb (*Epilobium spp.*), the Phoenician rose (*Rosa phoenicia*), with its brilliant white petals and yellow center, as well as two very rare yellow blossoms, stinking St. John's wort (*Hypericum hircinum*) and St. Peter's wort (*Hypericum tetrapterum*).

What looks a little like a pine sapling is none other than a horsetail fern (*Equisetum spp.*). This is a "living fossil" belonging to a grand group of plants and even trees that long ago covered large parts of the world, giving us much of the world's coal. Southern maidenhair fern (*Adiantum capillsveneris*) is another fern that can be seen in the reserve.

People and the Senir Stream Region

Humans have been making their mark in this region for thousands of years, digging water channels and creating roads.

Prehistoric humans left a great deal of evidence of their existence, dating back 150,000 years and more, in the red loam soil near Kibbutz Ma'ayan Barukh. The finds are displayed at the Ma'ayan Barukh Museum. Near Kibbutz Hagoshrim a large Chalcolithic site was discovered. The largest biblical site in the area is Tel Dan, with several other smaller sites nearby. Settlements from the period of the Mishna and the Talmud are found right next to the stream at Horvat Mamzi and Horvat Medan; numerous other sites from this period are to be found a short distance away. At the beginning of the 20th century an Arab settlement called Hasas was located east of the stream.

About 300 meters north of the reserve, where the stream channel emerges from the hills, a road crossed the stream at a ford. A major water channel called Kanat al-Amir began at this point, flowing southwest. East of the stream is a network of channels dating from all periods of history, most of which brought water from the Dan to the Hatsbani.

Zionist settlement began in this area with the establishment of the town of Metulla in 1896. It continued with Kibbutz Kefar Gil'adi, founded in 1916, Tel Hai in 1918, and Hamara in 1919. Later, in 1939, the kibbutzim Dan and Dafna were founded, followed by Beit Hillel in 1940 and Ma'ayan Barukh in 1947.

The Senir Stream is a major destination for rafting. The Spring Picnic Area on its banks is a special favorite among travelers. A hydroelectric power station was also established on the banks of the river, utilizing water from the Dan River to run turbines that produce electricity. The water then runs into the Senir.

In 1922, the border between the British and the French mandates was set by the Newcamp-Poulet Commission. The border crosses the Hatsbani 100 meters south of the Ghajar Bridge, one kilometer north of the reserve. During the Six-Day War, another four kilometers of the eastern (Syrian) bank fell into Israel's hands, while the western bank remained, as before, in Lebanese territory. In 1978, Israel temporarily took over the western (Lebanese) side of the stream. In May 2000, Israel evacuated that area, but remained in the area captured from Syria. Most of the village of Ghajar, whose residents are Israeli citizens and whose status – either Syrian or Lebanese – was questionable from the outset, was annexed to Israel. The northern half is in Lebanese territory.

Seasons of the Stream

Waterscapes in general, and the Senir Stream in particular, change often. The differences between the flooding in winter and the low stream in fall are amazing! There is even remarkable variation between July and August in terms of the water's level, strength of flow, and temperature. Places that are flooded at the beginning of summer are exposed at its end, and where dry land stood in summer, winter finds a stream to ford.

No less impressive are the differences from year to year (which may mean some information in this pamphlet is out of date). Floods cover the trail each year, sometimes sweeping it away entirely or covering it with sand, pebbles and even giant piles of branches. Some trees are uprooted by the flow; others grow and block the trail. At some points, even the stream channel itself changes.

The Trails



There are five trails in the reserve. Each trail is marked on the map in a different color to make it easier for you to follow.

The Red Trail (about 15 minutes)

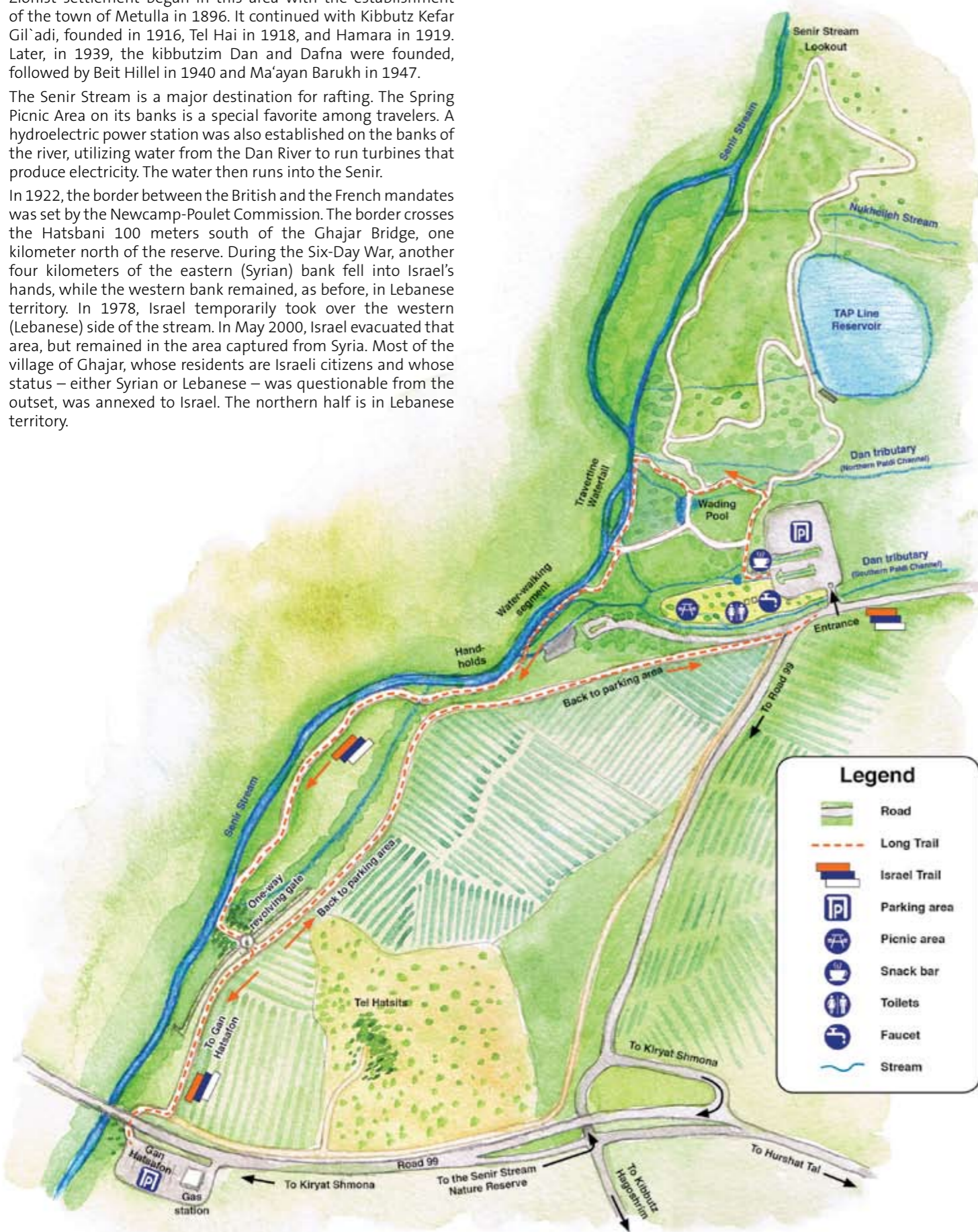
Loop trail, accessible

This trail begins at the parking area and follows a water channel lined with flourishing natural growth that blooms in summer. Within 10 minutes you'll arrive at a lovely waterfall that feeds wading pools and you'll find charming shady spots. From there the trail continues via another path back to the parking area. If you can do a few steps, you can continue to the stream – two more minutes on the purple trail (see below) – and then return to the red trail.

The Purple Trail – to the TAP Line Reservoir (20 minutes)

Loop trail, accessible

From the wooden walkway at the entrance to the trail, walk about 200 meters and turn right, following the signs, to the TAP Line Reservoir.



After a short walk, cross the small bridge over the channel, where clear water flows from the Dan Stream to the Senir Stream (the Northern Paldi Channel). Passing a mulberry tree and a seating area, walk up to the reservoir. In the fall and winter the reservoir throngs with winter-resident or migrating aquatic birds. A blind has been built on the embankment where you can relax and enjoy watching the birds that come to the reservoir seeking food. After taking in the view, continue along the embankment and turn left back to the parking lot or to the other trails.

The Green Trail – to the Senir Stream Lookout (40 minutes)

Continue along the embankment for about 50 meters more. On the way, a channel crosses the trail; it carries water from the Nukheileh Springs, which emerge in the area of the village of Ghajar. In summer there is hardly any water in the channel, while in winter it sometimes floods. After you cross the channel, the trail climbs steeply up a hill scattered with basalt boulders. From the top of the trail you can see the entire southern width of the Hula Valley – from the Naphtali Mountains in the west to the slopes of the Golan Heights in the east. You are 160 meters above sea level at this point; the valley is 90 meters below you.

In winter and spring the slopes of the hill blossom with a rich variety of flowers, mainly cyclamens. In fall, hundreds of sea squills rise tall. In summer the slopes turn yellow, and thorny plants abound. Here and there a tree has survived, mainly Mount Tabor oak, a few Atlantic pistachios as well as lotus jujube, Christ's thorn jujube, Palestine buckthorn, official storax, Syrian pear and Judas tree. An attempt was made to grow planted species such as pine and eucalyptus in this area, they too are mostly short and sparse. The ground under the jujube trees is covered with edible fruit.

A short walk will bring you north to a charming lookout onto the Senir Stream below.

You can't miss the sound of the water in this year-round flowing stream. And after a long, powerful rainstorm the flow becomes much stronger and turns muddy and impressive. Willows and oriental plane trees mark the stream's route, the latter's leaves turning a lovely golden brown in the fall. On the flood plain flanking the stream, "forests" of giant reeds and holy bramble can be clearly seen from here. Looking northeast you'll view Mount Hermon and the border fence with Lebanon, the Al-Mari Ridge and the Ayun Valley. Nearby are the remains of the foundations of manmade basalt walls.

The trail will bring you back from the hill to the south. At the end of the descent, at the foot of the hill, you will meet the Nukheileh Channel again. Passing through a tunnel you'll reach the bridge

and cross the channel. From there, the trail heads south, right along the border between the high stream-bank forest on the right and on the left, a meadow of fennel and a plant called clammy inula. Grapevines climb to the tops of the plane trees in the stream-bank forest on the right, and the holy bramble offers you its tasty fruit along the trail. Among the trees here you'll also find the Syrian ash – a rare stream-bank tree. Even if you're not tired, rest in the seating area and enjoy the tranquility and the shade of the plane trees.

Another small bridge will take you over a little stream that drains the TAP Line Reservoir. Here you'll particularly enjoy the sight of the willow trees, about which the Bible says "like a tree planted by streams of water." One willow spreads additional impressive trunks from its base, each one as much as 90 centimeters thick. Cross the Northern Paldi Channel and right afterward you'll join the short trail (the Red Trail). On your right you can see the Senir Stream and ahead of you is the wading pool.

The Blue Trail (about 30 minutes)

This loop trail, which takes about 30 minutes to walk, is not easy and is not recommended for children under five. This beautiful trail requires getting your feet wet to the ankles and promises fun and adventure: walking on boulders, climbing small rock steps, and walking over a tangle of tree roots. Take the Red Trail as far as the wading pool, leave it, and continue straight ahead, following the sign that says "Senir Stream."

From here, take the comfortable flight of steps down to the Senir Stream. At this point, you'll meet up with the northern Dan-Senir channel (the Paldi). Dan River water, a chilly 17 degrees Centigrade even in summer, flows through the channel, while the Senir water is a warm 22 degrees. Put one foot in the channel and one in the stream; you'll notice the difference!

The trail continues in the shade of flourishing streamside vegetation to an island in the stream. The Senir flows to its right and the Dan to its left. Further on, the trail passes wonderful waterfalls (travertine waterfalls) that nourish a rich growth of maidenhair ferns. Shortly thereafter the trail crosses a tributary of the Dan (to your left), which later joins the main Senir Stream. A high wall rises near the trail, composed of round basalt boulders bonded with travertine. You can see the shape of roots and reeds that sank in the travertine like fossils. Among other things, you will see impressions of fig leaves, entwined roots of plane trees, and willows, which add a special beauty to this embankment.

Ten minutes' walk will bring you to the comfortable steps back up to the plateau and from there, back to the parking area.