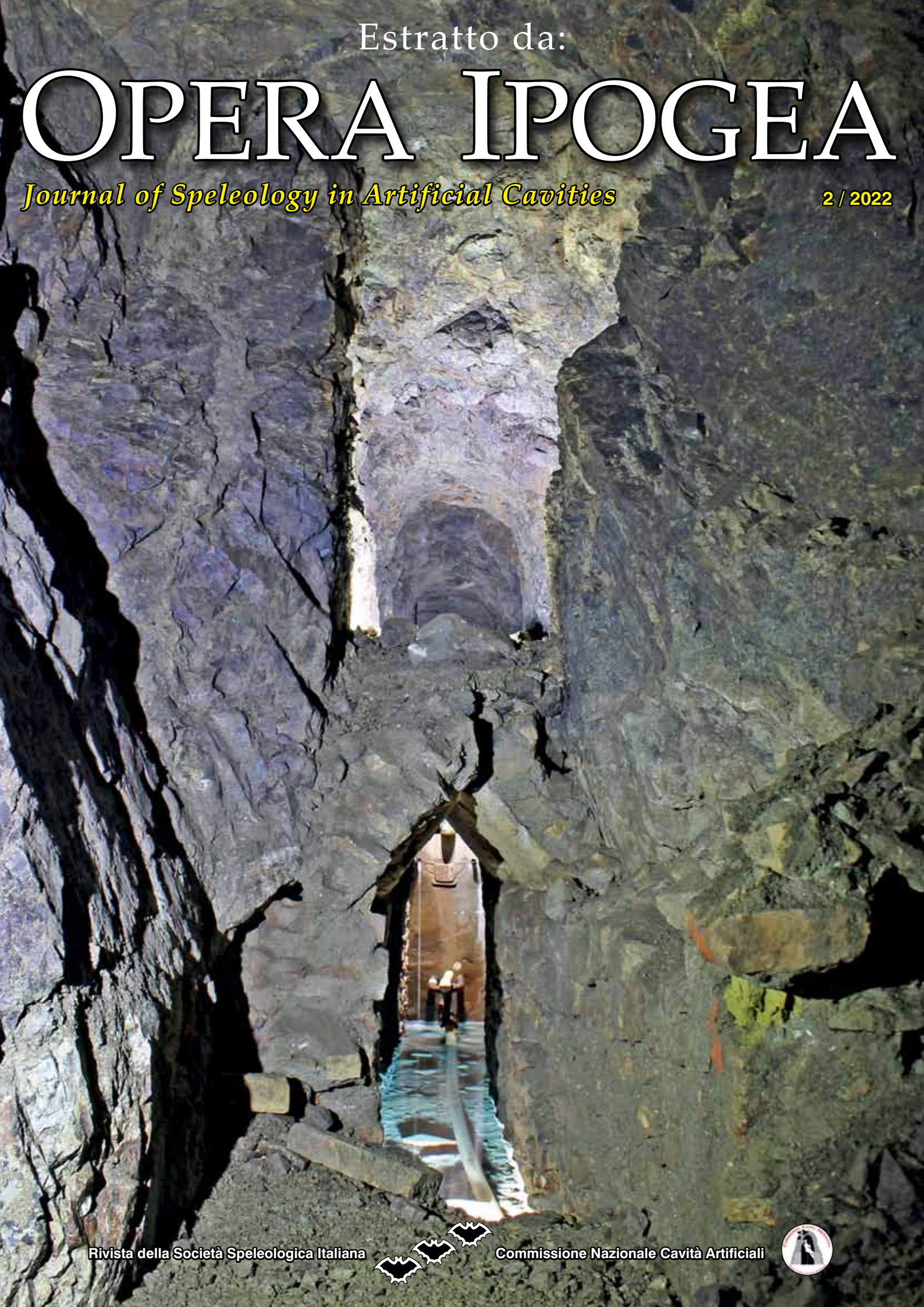


Estratto da:

# OPERA IPOGEA

*Journal of Speleology in Artificial Cavities*

2 / 2022





## Norme per gli Autori

### Sottomissione dei manoscritti

I manoscritti, inediti, dovranno essere redatti in italiano o in inglese ed essere inviati su supporto informatico, completi di immagini, alla Direzione della Rivista. Non saranno presi in considerazione contributi non conformi alle norme redazionali di seguito elencate sia per quanto riguarda il testo sia per quanto riguarda le illustrazioni.

### Referaggio

Tutti gli articoli sono sottoposti alla valutazione di almeno due revisori esterni, i cui giudizi saranno comunicati all'Autore o all'Autore di riferimento nel caso della presenza di più Autori.

### Indicazioni e istruzioni per gli Autori

- Gli articoli devono concernere tematiche relative alla speleologia in Cavità Artificiali e studi e applicazioni ad essa attinenti; non devono essere stati proposti o essere in corso di presentazione per la pubblicazione presso altre riviste; devono avere contenuto inedito, presentare dati o materia di impatto sufficiente sulla disciplina e rivestire interesse per l'avanzamento scientifico della base della conoscenza nello specifico ambito; devono avere un solido impianto metodologico e logico-argomentativo; devono possedere un adeguato e aggiornato apparato di riferimenti bibliografici.
- Gli autori dovranno indicare la loro afferenza (gruppo speleologico, struttura universitaria, etc.) completo di indirizzo postale ed e-mail, che sarà riportata sulla prima pagina del manoscritto (esempio: G. Rossi, Centro Studi Sotterranei di Genova, Corso Magenta 29/2 - 16125 Genova, Italia - giovannirossi@gmail.com). Nel caso di non appartenenza ad alcuna istituzione devono essere indicati l'indirizzo e i recapiti privati.
- Nel caso il manoscritto sia redatto da più Autori, specificare il nome dell'Autore di riferimento (nome, cognome, recapito postale ed e-mail).
- La lunghezza dei lavori non deve superare le 50.000 battute, figure incluse, salvo eccezioni da concordare con la Direzione della Rivista.
- Le didascalie delle figure devono essere bilingue (italiano ed inglese).
- Gli Autori sono responsabili del testo inviato per la pubblicazione e si assumono ogni responsabilità relativa a diritti di *copyright* su testo, fotografie, disegni e immagini sottoscrivendo il modulo che sarà inviato dalla Direzione della Rivista al momento dell'accettazione del contributo. L'autore/gli autori devono dichiarare, sotto la propria responsabilità, che il contributo inviato corrisponde a una produzione scientifica propria e originale, di non aver in corso di pubblicazione né di aver presentato il medesimo contributo per la pubblicazione presso altre sedi e di essere in possesso delle necessarie autorizzazioni per la pubblicazione dei dati e dell'apparato grafico e fotografico. Qualora la proprietà dell'immagine non sia dell'autore, la fonte deve essere esplicitamente indicata nella didascalia. L'autore dichiara che le immagini incluse nel testo sono esenti dal pagamento di alcun diritto, assumendosene ogni responsabilità nei confronti di chiunque dovesse eventualmente richiedere un risarcimento. L'autore dichiara che non pubblicherà il contributo nella medesima forma, neppure in una seconda lingua, senza il consenso della Direzione della Rivista.
- Si richiede all'autore/autori di rispettare un periodo di 12 mesi prima della divisione dell'articolo pubblicato in un archivio accessibile on-line. Tale regola consente a Opera Ipogea e alla SSI di proseguire nell'attività di editoria scientifica senza danneggiare il sistema di abbonamenti e le vendite necessarie al proseguimento dell'attività stessa. L'autore/autori si impegnano pertanto a non pubblicare l'articolo su portali di condivisione e/o distribuzione on-line fatta eccezione per titolo, abstract e parole chiave, prima di un anno dalla sua pubblicazione cartacea.

### Organizzazione del testo

- A partire dalla prima pagina il lavoro deve contenere: titolo del lavoro in italiano, titolo del lavoro in inglese, nome e cognome degli autori, indirizzi e afferenze degli Autori, riassunto in italiano di non oltre 1000 battute, abstract esteso in inglese di almeno 3000 battute e cinque termini chiave (in italiano e inglese).
- Il titolo dell'articolo va scritto con allineamento a sinistra. I titoli di paragrafo non vanno numerati e vanno scritti con allineamento a sinistra. I titoli di eventuali sottoparagrafi vanno, sempre con allineamento a sinistra.
- Tutte le illustrazioni devono essere richiamate nel testo con numerazione araba progressiva fra parentesi tonde secondo la dicitura tutta in minuscolo (fig. 1, tab. 1); parti delle figure devono essere indicate nel testo con la dicitura (fig. 1a). Nel contesto di una frase le figure possono essere indicate anche per esteso (es.: ... nella figura ...).
- Eventuali note dovranno essere indicate nel testo dell'articolo mediante richiamo con numero arabo con effetto apice e poste al termine dell'articolo.
- Le citazioni bibliografiche nel testo vanno indicate fra parentesi tonde, ad esempio: (Cognome dell'Autore, virgola, anno di edizione). Nel caso di più lavori citati in serie devono essere riportati in ordine cronologico separati da punto e virgola, ad esempio: (Bianchi & Rossi, 1999; Verdi et al., 2000). Più articoli dello stesso Autore pubblicati nello stesso anno, vanno distinti con lettere minuscole dopo la data, ad esempio: (Bianchi 1999a; Bianchi 1999b).
- Nel caso di denominazioni lunghe e ricorrenti nel testo si consiglia di esplicitare

la denominazione per esteso solo la prima volta, facendola seguire, tra parentesi tonde, dal suo acronimo che verrà utilizzato successivamente; ad esempio: Tufo Giallo Napoletano (TGN).

- I punti cardinali vanno citati per esteso con la lettera minuscola (es.: a nord, a est sud est di Roma), mentre nel caso di direzioni essi vanno indicati con la sigla maiuscola (es.: N-S; ESE-WNW).
- Le unità di misura devono essere metriche del Sistema Internazionale (km, m, mm) o nel caso di antiche unità di misura deve essere indicato, tra parentesi tonde, l'equivalente in unità metriche. Per le unità di misura non va usato il punto.

### Ringraziamenti

- I ringraziamenti alla fine del testo vanno preceduti dalla dicitura **Ringraziamenti** allineata a sinistra (così come un titolo di paragrafo).

### Citazioni bibliografiche

- Nell'elenco bibliografico finale vanno riportati esclusivamente i riferimenti citati nel testo.
- Non sono ammesse citazioni di lavori in preparazione mentre possono essere fatti riferimenti a lavori effettivamente in corso di stampa.
- La letteratura citata va elencata alla fine del manoscritto in ordine alfabetico e preceduta dalla dicitura **Bibliografia** allineata a sinistra. La lista va compilata in ordine alfabetico per Autore secondo gli esempi sotto riportati:
  - articoli in riviste: Alvaro B., Bianchi G., 2010, *I villaggi trogloditici della Puglia*, in Opera Ipogea 2-2010, pp. 45-56.
  - contributi in atti di convegni/miscellanee/volumi: Fantoni S., 2019, *Il contributo della speleologia all'archeologia in cavità artificiali*, in Mucci D., Giolfi S. (a cura di), *Archeologia e speleologia a confronto*, Skira editore, pp. 110-135.
  - monografie: Rossi A., 2018, *Esplorare le cavità artificiali*, Einaudi.

### Figure e disegni

- L'apparato iconografico (in formato massimo A4) deve essere fornito separatamente al testo esclusivamente in formato digitale e nella versione finale. Le fotografie, a colori o in scala di grigi, devono essere fornite in file singoli per ciascuna illustrazione e in formato .JPG o .TIFF alla risoluzione di 300 dpi. Le foto devono essere di ottima qualità. I disegni devono essere presentati a colori o in scala di grigi, in file di formato .JPG o .TIFF, alla risoluzione di 600 dpi. I file devono essere nominati con il numero progressivo delle figure utilizzato nei rimandi nel testo, ad esempio: (fig. 1), ed essere accompagnati dalle didascalie bilingue nel file di testo (.doc), separatamente da quello dell'articolo.
- L'autore può proporre le dimensioni di stampa delle immagini ma il CdR si riserva comunque la facoltà di modificarle.
- Le lettere ed i numeri inseriti nei disegni o nelle fotografie devono risultare leggibili nella versione a stampa (dovranno essere compresi tra 1 e 5 mm). Si consigliano i caratteri Arial o Helvetica con dimensioni non inferiori a 6-8 pt.
- Tutte le mappe o i rilievi topografici devono riportare una scala metrica e indicazione del Nord.
- Nel caso in cui si utilizzino illustrazioni tratte da lavori già pubblicati va sempre indicata la fonte da cui è tratta (esempio: foto tratta da Rossi A. 2018, p. 35).
- Indicare sempre nelle didascalie l'autore della foto o del disegno (esempio: foto D. Natali / disegno G. Azzero / foto tratta da Rossi A. 2018, p. 35).
- Il testo della didascalia deve essere indicato nel seguente modo: Fig. o Tab., spazio, numero della illustrazione, spazio, trattino medio, spazio, descrizione dell'illustrazione, spazio, aperta parentesi tonda non seguita da spazio, foto o disegno o grafica, sigla maiuscola nome puntato, spazio, cognome, chiusa parentesi tonda senza esser preceduta da uno spazio, punto finale senza esser preceduto da spazio; esempio: Fig. 7 - Particolare della lucerna ritrovate nelle cavità (foto M. Rossi). Altro esempio: Tab. 4 - Sezione geologica schematica (grafica M. Rossi).
- La didascalia in inglese deve essere in corsivo; esempio: *Fig. 7 - Detail of an ancient lamp found inside the cavities (photo M. Rossi)*. Altro esempio: *Tab. 4 - Schematic geological cross-section (drawing M. Rossi)*.

### Copie su supporto informatico

Gli articoli devono essere elaborati in Word per Windows 97-2003 o successivi (file .doc), senza impaginazione (evitando quindi rientri, interlinea diversificata, tabulazioni, bordi, sfondi). I lavori completi (testi, disegni, fotografie) vanno inviati **esclusivamente su DVD/CD-Rom** a Direzione Opera Ipogea, presso STUDIO SAJ - Corso Magenta 29/2 - 16125 Genova, oppure via e-mail (tramite WeTransfer o affini) A: [maxman@unimol.it](mailto:maxman@unimol.it) e Cc: [studiosaj@aruba.it](mailto:studiosaj@aruba.it)

**Tempi di consegna:** per pubblicare sul primo numero annuale (primo semestre) della rivista è richiesto l'invio dei materiali entro la metà di marzo dell'anno in corso; per pubblicare sul secondo numero annuale (secondo semestre) è richiesto l'invio dei materiali entro la metà di settembre dell'anno in corso.

TUTTI I MANOSCRITTI CHE NON SI ATTERRANO ALLE PRESENTI NORME SARANNO RISPEDITI AGLI AUTORI PER IL NECESSARIO ADEGUAMENTO.

pag. 5 **L'antico collettore idraulico "Buso della Casara" di Cinto Euganeo (Padova, Veneto)**

**The ancient "Buso della Casara" hydraulic manifold of Cinto Euganeo (Padova, Veneto, Italy)**

*Adriano Menin, Daniele Davolio, Marco Romano*



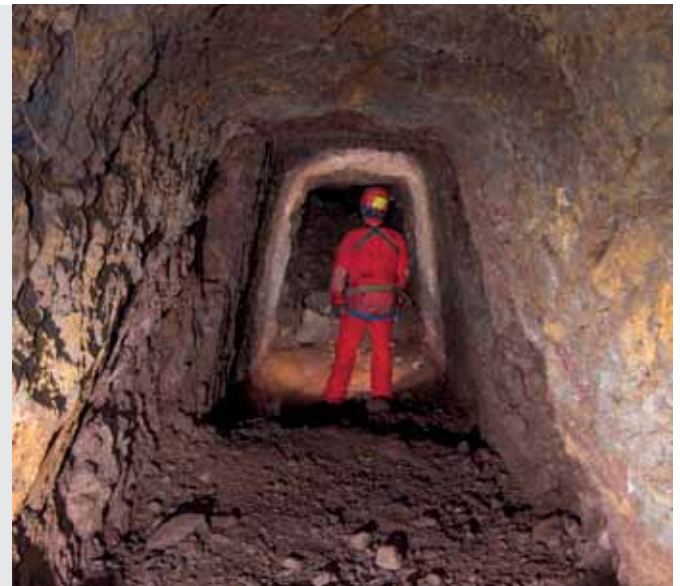
pag. 21 **Il giacimento manganesifero di Canneto (Pisa)**

Prima descrizione del complesso minerario e proposta di una minerogenesi a due fasi: primaria ed epigenetica idrotermale

**The manganese deposit of Canneto (Pisa, Italy)**

The first description of the mining complex and proposal of a two-phase minerogenesis: primary and epigenetic-hydrothermal

*Luca Tinagli, Antonio Muti, Gianluca Salvador*



pag. 39 **Judean hiding complexes: a geographical, typological and functional update (Israel)**

**I complessi nascosti della Giudea: un aggiornamento geografico, tipologico e funzionale (Israele)**

*Dvir Raviv, Boaz Zissu*





pag. 55 **Due bypass degli acquedotti dell'Anio Vetus e dell'Aqua Marcia ubicati tra San Gregorio da Sassola e Galliciano nel Lazio (Roma)**

**Two bypasses of the Anio Vetus and Aqua Marcia aqueducts located between San Gregorio da Sassola and Galliciano nel Lazio (Rome, Italy)**

*Luigi Casciotti*



pag. 71 **Derevank rock-cut monastery of Kayseri (Turkey)**

**Il monastero rupestre di Derevank a Kayseri (Turchia)**

*Ali Yamaç*



pag. 83 **L'acquedotto ipogeo della Bolla**  
Nuove esplorazioni nel sottosuolo del centro antico di Napoli

**The Bolla underground aqueduct**  
New explorations in the subsoil of historical centre of Naples (Italy)

*Rosario Varriale*



pag. 95 **Kayseri province (Turkey): 2022 update of the inventory of artificial cavities**

**Provincia di Kayseri (Turchia): aggiornamento 2022 dell'inventario delle cavità artificiali**

*Ali Yamaç, Roberto Bixio*

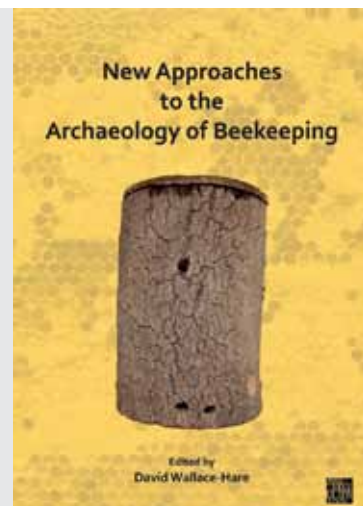


## Segnalibri

pag. 109 **New Approaches to the Archaeology of Beekeeping**

*a cura di David Wallace-Hare*

*recensione a cura della Redazione*

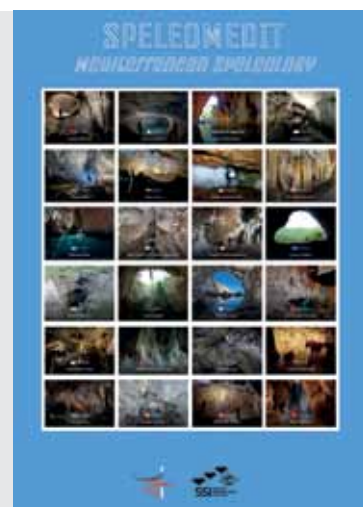


pag. 110 **SPELEOMEDIT  
Mediterranean Speleology**

(Panoramic view of caves and karst of Mediterranean countries)

*a cura di  
Ferdinando Didonna e Francesco Maurano*

*recensione a cura di Roberto Bixio*



# OPERA IPOGEA


JOURNAL OF SPELEOLOGY IN ARTIFICIAL CAVITIES

Memorie della Commissione Nazionale Cavità Artificiali

Autorizzazione del Tribunale di Bologna n. 7702 dell'11 ottobre 2006

**Rivista Semestrale della Società Speleologica Italiana ETS**

ISSN 1970-9692 / DOI <https://doi.org/10.57588/SSIOI12022>

[www.operaipegea.it](http://www.operaipegea.it)  operaipegea

**Rivista dell'Area 10 "Scienze dell'antichità, filologico-letterarie e storico-artistiche"**  
classificata dell'Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca (ANVUR)  
quale rivista scientifica rilevante ai fini dell'Abilitazione Scientifica Nazionale (ASN)

## Direttore Responsabile

Stefano Saj / studiosaj@aruba.it

## Direttore Editoriale

Massimo Mancini / maxman@unimol.it

## Comitato Scientifico

Roberto Bixio / Centro Studi Sotterranei / Genova  
Elena Calandra / Istituto Centrale per l'Archeologia - MiC / Roma  
Vittoria Caloi / Istituto Nazionale di Astrofisica / Roma  
Marilena Cozzolino / Università degli Studi del Molise / Campobasso  
Carlo Ebanista / Università degli Studi del Molise / Campobasso  
Francesco Faccini / Università degli Studi di Genova / Genova  
Angelo Ferrari / IMC - Consiglio Nazionale delle Ricerche / Montelibretti (RM)  
Carla Galeazzi / Società Speleologica Italiana / Bologna  
Paolo Madonia / Istituto Nazionale di Geofisica e Vulcanologia / Roma  
Roberto Maggi / Laboratorio di Archeologia e Storia Ambientale - UniGe / Genova  
Massimo Mancini / Università degli Studi del Molise / Campobasso  
Roberto Nini / Associazione Culturale Subterranea / Narni (TR)  
Mario Parise / Università degli Studi di Bari "Aldo Moro" / Bari  
Mark Pearce / University Nottingham / United Kingdom  
Stefano Saj / Centro Studi Sotterranei / Genova  
Marco Vattano / Università degli Studi Palermo / Palermo  
Boaz Zissu / Bar-Ilan University / Ramat-Gan / Israel

## Comitato di Redazione

Michele Betti, Roberto Bixio, Sossio Del Prete, Andrea De Pascale,  
Carla Galeazzi, Carlo Germani, Massimo Mancini, Stefano Saj

## Redazione

c/o Studio Saj / Corso Magenta 29/2, 16125 Genova - Italia

## Composizione e impaginazione

Luca Paternoster, Stefano Saj

**Anno XXIV / Numero 2 / Luglio - Dicembre 2022**

## Foto di copertina

Particolare del settore occidentale del Buso della Casara (Padova, Veneto) (foto M. Romano)

## Foto quarta di copertina

Ingressi del complesso rupestre di Derevank (Kayseri, Turchia) (foto di A. Yamaç)

**La Rivista è distribuita in abbonamento annuale  
e inviata in omaggio ai soci sostenitori e ai gruppi associati della SSI ETS**  
[www.operaipegea.it/abbonamenti-subscriptions-opera-ipegea](http://www.operaipegea.it/abbonamenti-subscriptions-opera-ipegea)

## Abbonamenti e vendite

Fabrizio Milla / fabrizio.fabus@libero.it

## Tipografia

Conigraf Srl - Viserba (RN)

# Judean hiding complexes: a geographical, typological and functional update (Israel)\*

## I complessi nascosti della Giudea: un aggiornamento geografico, tipologico e funzionale (Israele)

Dvir Raviv<sup>1</sup>, Boaz Zissu<sup>1</sup>

### Abstract

“Hiding complexes” are subterranean rock-cut complexes that were used for hiding purposes underneath Jewish settlement sites during the Roman period. Known mainly in the Judean Shephelah and the Lower Galilee, they are characterized by underground cavities and installations linked in a ramified network of narrow passages and winding burrows, sometimes forming a rock-cut maze beneath the ancient settlements. Most of the complexes are cut deep into the bedrock underneath residential buildings.

Many of the underground complexes have standard features that suggest that they were part of the Jews’ strategy against the Roman army. Earlier underground facilities were transformed, their original openings were sealed, and narrow shafts were carved and camouflaged in the floors of buildings or in the walls of earlier underground halls, turning them into hidden shelters. The complexes were of different dimensions and had various purposes.

Numerous studies have been published since the late 1970s on the significance of these complexes, the geographical reach of the phenomenon, and its historical importance. Due to the discovery of artifacts from the time of the Bar Kokhba Revolt (132-136 CE) in many of the complexes, as well as Cassius Dio’s description of the Jews’ preparations in the second revolt against Rome (*Roman History* 69.12.1), the hiding complexes have been identified with the Bar Kokhba Revolt. However, recent excavations and surveys in dozens of typical hiding complexes in Judea and the Galilee indicate that such complexes existed as early as the late Second Temple period, more precisely the late first century BCE.

This paper sums up the latest information on the Judean hiding complexes and discusses their historical ramifications.

The updated corpus presented in this article includes 439 hiding place complexes located at 252 settlement sites, including approximately 90 sites not previously known to researchers. The current corpus also includes new information that can be used to date several previously published complexes.

If we examine all the hiding complexes in the current corpus, we can propose dates for 202 of them (at 142 sites) based on finds in interior sections of the complexes or on relative chronology. In 139 of the complexes (at 109 sites), the finds were dated with certainty to the period between the uprisings or to the Bar Kokhba Revolt; finds from a further 28 complexes (at 18 sites) were dated broadly to the first or second century CE. A total of 37 complexes (at 17 sites) contained items from the first century CE, and 24 complexes (at 7 sites) contained items from the first century BCE. The finds from the first century BCE and the first century CE were often located in earlier installations that had been incorporated into the hiding complexes; therefore, they cannot be used to date the hiding stage. In any event, artifacts from the first century BCE have been discovered in at least 10 complexes (at 5 sites) and artifacts from the first century BCE have been discovered in 28 complexes (at 12 sites) – all in interior sections used for hiding. Significantly, in most of the complexes that contained finds from 70-136 CE (129 of the 142 complexes), no earlier artifacts were discovered. These data support the standard assumption that most of the hiding complexes were created during the period between the revolts and at the time of the Bar Kokhba Revolt. A review of the geographical distribution of complexes with finds from the late Second Temple period, as well as those with finds from 70-136 CE, shows their presence throughout the area of Jewish settlement in Judea.

*Keywords: Hiding complexes, Cassius Dio, Bar Kokhba Revolt, Underground Quarry, Jew, Roman Army, Hidden Shelters, Judea, Galilee.*

### Riassunto

I “complessi nascosti” sono sotterranei scavati nella roccia utilizzati per nascondersi sotto gli insediamenti ebraici durante l’età romana. Conosciuti principalmente nella Shephelah Ebraica e nella Bassa Galilea, sono caratterizzati da cavità sot-

\* Dedicated to the memory of our colleague and teacher, Prof. Amos Kloner, explorer of Judean hiding complexes.

<sup>1</sup> Bar-Ilan University, Ramat-Gan 52900, Israel

Autore di riferimento: Boaz Zissu - bzissu@gmail.com



terranean e installazioni collegate in una rete ramificata di passaggi stretti e gallerie tortuose che a volte formano un labirinto scavato nella roccia al di sotto degli antichi insediamenti. La maggior parte dei complessi sono scavati in profondità nel substrato roccioso sotto gli edifici residenziali. Molti dei complessi sotterranei hanno caratteristiche standard che suggeriscono come facessero parte di una strategia sviluppata degli Ebrei contro l'esercito romano. Le precedenti strutture sotterranee furono trasformate, le loro aperture originarie vennero sigillate e stretti pozzi furono scavati e mimetizzati nei pavimenti degli edifici o nelle pareti delle precedenti sale sotterranee, trasformando così gli ipogei più antichi in rifugi nascosti. I complessi erano di varie dimensioni e avevano diversi scopi. Numerosi studi sono stati pubblicati dalla fine degli anni '70 sul significato di questi complessi, sulla portata geografica del fenomeno e sulla loro importanza storica. A causa della scoperta di manufatti dell'epoca della rivolta di Bar Kokhba (132-136 d.C.) in molti dei complessi, nonché per la descrizione di Cassio Dione dei preparativi degli Ebrei nella seconda rivolta contro Roma (Storia romana 69.12.1), i complessi nascosti sono stati identificati con la rivolta di Bar Kokhba. Tuttavia, recenti scavi e sondaggi in decine di questi complessi di rifugi in Giudea e in Galilea indicano che tali strutture esistevano già nel tardo periodo del Secondo Tempio, più precisamente alla fine del I secolo a.C. Questo lavoro riassume le ultime informazioni sui rifugi della Giudea e ne discute le vicende storiche. Il corpus aggiornato presentato in questo articolo comprende 439 complessi situati in 252 siti di insediamento, inclusi circa 90 siti non precedentemente noti agli studiosi. L'attuale *corpus* include anche nuove informazioni che possono essere utilizzate per datare diversi complessi precedentemente pubblicati. Se esaminiamo tutti i complessi nascosti nell'attuale *corpus*, possiamo proporre datazioni per 202 di essi (in 142 siti) sulla base di ritrovamenti nelle gallerie interne dei complessi o sulla relativa cronologia. In 139 dei complessi (in 109 siti), i reperti sono stati datati con sicurezza al periodo tra le rivolte o alla rivolta di Bar Kokhba; i reperti di altri 28 complessi (in 18 siti) sono stati datati al I o II secolo d.C. Un totale di 37 complessi (in 17 siti) contenevano oggetti del I secolo d.C. e 24 complessi (in 7 siti) contenevano oggetti del I secolo a.C. I reperti del I secolo a.C. e del I secolo d.C. si trovavano spesso in installazioni precedenti che erano state incorporate nei complessi usati come rifugio; pertanto, non possono essere utilizzati per datare la fase precedente. In ogni caso, manufatti del I secolo a.C. sono stati scoperti in almeno 10 complessi (in 5 siti) e manufatti del I secolo d.C. sono stati scoperti in 28 complessi (in 12 siti), tutti in sezioni interne utilizzate per nascondersi. È significativo che nella maggior parte dei complessi che contenevano reperti dal 70 al 136 d.C. (129 dei 142 complessi), non sono stati scoperti manufatti precedenti. Questi dati supportano l'ipotesi che la maggior parte dei complessi usati come nascondiglio siano stati creati durante il periodo tra le rivolte e al momento della rivolta di Bar Kokhba. Un'analisi della distribuzione geografica dei complessi con reperti del periodo tardo del Secondo Tempio, nonché di quelli con reperti dal 70 al 136 d.C., mostra un'ampia presenza nell'area dell'insediamento ebraico in Giudea.

*Parole chiave: Complessi nascosti, Cassio Dione, Rivolta di Bar Kokhba, Cava sotterranea, Ebrei, Esercito romano, Rifugi nascosti, Giudea, Galilea.*

## Introduction

“Hiding complexes” are subterranean rock-cut complexes that were used for hiding purposes underneath Jewish settlement sites during the Roman period. Known mainly in the Judean Shephelah and the Lower Galilee, they are characterized by underground cavities and installations linked in a ramified network of narrow passages and winding crawlways (or burrows; fig. 1), that sometimes form a rock-cut maze of sorts beneath the ancient settlements. Most of the complexes are cut deep into the bedrock underneath residential buildings; only a few were located outside settlements.

In the Hellenistic and Early Roman periods, it was customary to cut underground chambers, halls and installations underneath houses and in courtyards between houses for everyday uses. These artificial cavities, which formed part of the settlement's infrastructure, had a wide variety of functions: cisterns, ritual baths (fig. 2), olive presses, silos and storerooms (fig. 3), stables, columbaria (fig. 4), underground quarries (fig. 5), etc.

The makers of the hiding complexes blocked the original entrances to these preexisting cavities (fig. 6a) and linked them by means of ramified networks of underground crawlways (fig. 6b), which are a distinctive feature of this phenomenon. Blocking original entrances and cutting walls of underground installations was



Fig. 1 – A typical junction of burrows in the complex hewn under Kh. el-Muraq - “Hilkiya Estate” (photo S. Cohen).

*Fig. 1 – Un tipico incrocio di gallerie rifugio nel complesso scavato sotto Kh. el-Muraq - “Tenuta Hilkiya” (foto S. Cohen).*

clearly an emergency measure, which interrupted the former routine and economic life. The crawlways are winding, sometimes with 90-degree bends or changes





Fig. 2 – A burrow cuts wall of stepped ritual bath at H. Ha-Muzav. Note round blocking stone (Courtesy of Avraham Tendler; photo A. Peretz).

*Fig. 2 – Un accesso a un rifugio taglia il muro della vasca rituale a gradini a H. Ha-Muzav. Notare la pietra di blocco rotonda (per gentile concessione di Avraham Tendler; foto A. Peretz).*



Fig. 4 – Columbarium chamber at H. Burgin. The original entrance to this earlier facility was blocked. Burrows cut two of its walls, turning the columbarium into an underground shelter (photo B. Zissu).

*Fig. 4 – Camera del colombario a H. Burgin. L'ingresso originario di questa struttura prima era bloccato. I tunnel tagliano due pareti, trasformando il colombario in un rifugio sotterraneo (foto B. Zissu).*



Fig. 3 – A crawlway cuts wall of storage hall at H. Qasra (photo B. Zissu).

*Fig. 3 – Un basso tunnel taglia il muro del magazzino di H. Qasra (foto di B. Zissu).*



Fig. 5 – Burrows cut through walls of earlier underground quarry (L), converting it into an underground shelter at Kh. el-Muraq - "Hilkiya Estate" (photo Shachar Cohen).

*Fig. 5 – Gli accessi ai tunnel tagliano i muri della precedente cava sotterranea (L), convertendola in un rifugio sotterraneo a Kh. el-Muraq - "Tenuta Hilkiya" (foto Shachar Cohen).*

of level by means of vertical shafts (fig. 7). Along some of the crawlways there are mechanisms that block them from the inside (fig. 8). The purpose of the sharp bends, level changes, and blocking facilities was to hinder and endanger intruders. The crawlways connect distant parts of the settlement; some were used to escape from a settlement.

Many of the underground complexes have standard features that suggest that they were part of the Jews' strategy against the Roman army. Earlier underground structures were transformed, their original openings were sealed, and narrow shafts were dug

and camouflaged in the floors of buildings or in the walls of previous underground halls, turning them into hidden shelters. Earlier cisterns underwent similar processes: their upper, external openings were concealed, and water was drawn through a burrow, from inside the hideout. The complexes were of different dimensions and had various purposes. There were small family hiding facilities and intricate, highly branched complexes meant for public use. Few were hewn purposefully as hiding systems; these contain passages and small chambers, but they lack access to earlier underground installations (fig. 9).



Fig. 6A – Underground quarry at H. Qasra. The original entrance to this cavity (marked 1) was blocked and the flight of steps descending into the cavity were cut (photos B. Zissu).

*Fig. 6A – Cava sotterranea a H. Qasra. L'originario ingresso di questa cavità (1) è stato bloccato e la scalinata che scende nell'ambiente è stata tagliata (foto Boaz Zissu).*



Fig. 7 – Stepped shaft along a burrow at H. Qasra (photo B. Zissu).

*Fig. 7 – Pozzo a gradini lungo un rifugio a H. Qasra (foto B. Zissu).*



Fig. 6B – Underground quarry at H. Qasra. A crawlway cuts one of its walls. In case of need, the opening of the crawlway was sealed with a blocking slab (the slab's frame is marked 2) (photos B. Zissu).

*Fig. 6B – Cava sotterranea a H. Qasra. Un basso tunnel taglia una delle sue pareti. In caso di necessità, l'apertura del tunnel veniva sigillata con una lastra di chiusura (2: alloggiamento del telaio della lastra) (foto B. Zissu).*



Fig. 8 – Blocking device with blocking stone and features for wooden beam at Khallet Qeis (photo B. Zissu; courtesy of Eitan Klein and Alon Klein).

*Fig. 8 – Dispositivo di blocco con pietra di chiusura e alloggiamento per trave di legno a Khallet Qeis (foto B. Zissu; per gentile concessione di Eitan Klein e Alon Klein).*

Numerous studies have been published since the late 1970s on the significance of these complexes, the geographical reach of the phenomenon, and its historical importance (for a list of sources, see Kloner & Zissu, 2009; Mor, 2016; Eshel & Zissu, 2020). Thanks to the discovery of artifacts from the time of the Bar Kokhba Revolt (132-136 CE) in many of the complexes, as well as Cassius Dio's description of the Jews' preparations in the second revolt against Rome (*Roman History* 69.12.1), the hiding complexes have been identified

with the Bar Kokhba Revolt. However, excavations and surveys conducted in the 1980s and 1990s in dozens of typical hiding complexes in Judea and the Galilee indicate that such complexes existed as early as the late Second Temple period, more precisely the late first century BCE.

The discovery and study of dozens of hiding complexes in the Judean Hills and the Shephelah in the past decade have revealed a great deal of additional information on the corpus of hiding complexes. Systematic



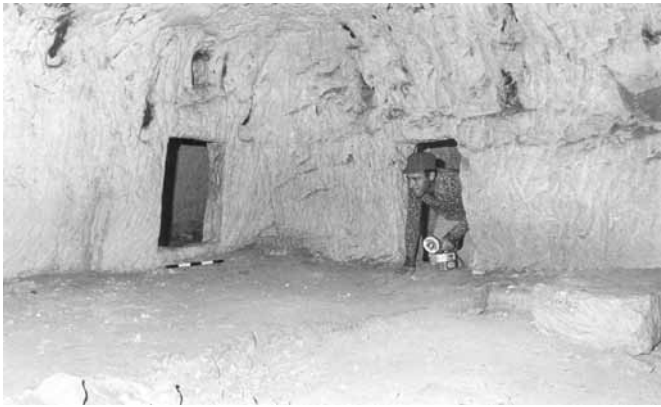


Fig. 9 – Amos Kloner in the central chamber of the public hiding complex at H. Naqiq, 1980. Most of the components of this complex were originally hewn for hiding purposes (photo T. Sagiv).

*Fig. 9 – Amos Kloner nella camera centrale del complesso pubblico di rifugi a H. Naqiq, 1980. La maggior parte delle componenti di questo complesso furono originariamente scavati per finalità di protezione/nascondiglio (foto T. Sagiv).*

attention to the dating of the complexes, their architectural features, and their integration in buildings in the rural space gives us a more precise understanding of various aspects of these installations. Most importantly, it enables us to update our knowledge of the geographical extent of the phenomenon, understand its typological-chronological development, explain the purpose of the complexes, and reconsider what geographical region prepared for the Bar Kokhba Revolt, took part in it, and was eventually destroyed.

This paper sums up the latest information on the hiding complexes and discusses their historical ramifications. Because recent studies have already reviewed hiding complexes in the Galilee (Shivtiel, 2011; Shivtiel, 2019), the present work will focus on those documented in and around Judea. The area in question covers the region of Judea in a limited geographical sense, (*Jewish War* Josephus's 3.51-56), as well as nearby areas, including the coastal plain, the southern Samaria hills, the Samaria western slopes, and the Nabata area (northwestern Samaria).

## Research history

Although hiding complexes were first documented in the Judean Shephelah in the late nineteenth and early twentieth centuries, only in the late 1970s the first studies were published on their significance, scope, and historical contexts. In these 40 years of research, what stands out is the distinction between the Judean Shephelah and the Judean Hills. Essentially, although the study of hiding complexes began in the Hills of Judea, the greatest concentration of these complexes is found in the Shephelah of Judea, and the sophisticated architectural plan of those in the latter region meant that they were more closely identified with that region.

The use of hiding complexes was first summed up in a comprehensive study published by A. Kloner and Y. Tepper (1987). This trailblazing study covered about 280 hiding complexes at 108 settlement sites in Judea, 101 of them in the Judean Shephelah and 7 in the northern Hebron hills. Based on archaeological and historical considerations, the phenomenon has been tentatively attributed to the time of the Bar Kokhba Revolt, although as early as the 1980s, some researchers noted that it may have begun in the late Second Temple period. (e.g., Oppenheimer, 1982; Yadin, 1982; Aviam, 1983; Foerster, 1983).

From the late 1980s until the early twenty-first century, dozens of hiding complexes were uncovered in salvage excavations in the northern Judean Shephelah; several others were documented in the southern Hebron hills and the Beit El hills. Their distribution was summed up by B. Zissu in his study of Judea (Zissu, 2001), and in a series of articles by Kloner and Zissu (2003; 2005; 2009; 2016). These studies list approximately 320 hiding complexes at 125 settlements sites. Most are located in the Shephelah, although about 30 of the sites are in the Judean Hills. Based on the findings in surveys and excavations, the following typological-chronological division was proposed: small, family hiding complexes were created in the early first century CE, but most of the complexes, including the large, sophisticated ones, were created at the time of the Bar Kokhba Revolt (Kloner & Zissu, 2003; Kloner & Zissu, 2009).

A significant turning point with respect to the distribution of the complexes occurred in 2008-2019, with the discovery by D. Raviv and his associates of dozens of typical complexes in the Judean Hills and the eastern Judean Shephelah;<sup>1</sup> most of them are discussed in his doctoral dissertation (Raviv, 2018b). Meanwhile, in the past decade additional hiding complexes have been discovered in excavations and surveys at a series of sites in the Judean Shephelah, the Lod Shephelah, the coastal plain, the Jerusalem hills, the Hebron hills, the Beit El hills, and the Samaria western slopes.<sup>2</sup> In addition, a crucial advance occurred in the past decade with respect to their chronology and typology: the publication of hiding complexes at Neshet-Ramla, some of them fairly large, dated to the first century BCE and the first century CE (Melamed, 2020).

## The up-to-date corpus of hiding complexes in Judea

The current corpus of hiding complexes includes subterranean complexes that meet one of the following two criteria: (1) a complex containing at least one cavity where people can live (at least temporarily) and which is accessed through a typical burrow (fig. 10);

<sup>1</sup> For a bibliography, see Klein & Raviv, 2012; Raviv & Langford, 2017; Raviv, 2018a; Raviv, 2018b, pp. 239-241.

<sup>2</sup> For a bibliography, see Zelinger, 2009; Zissu and Kloner, 2005; Kloner & Zissu 2016, Ein Mor *et al.*, 2019; Raviv *et al.*, 2020.

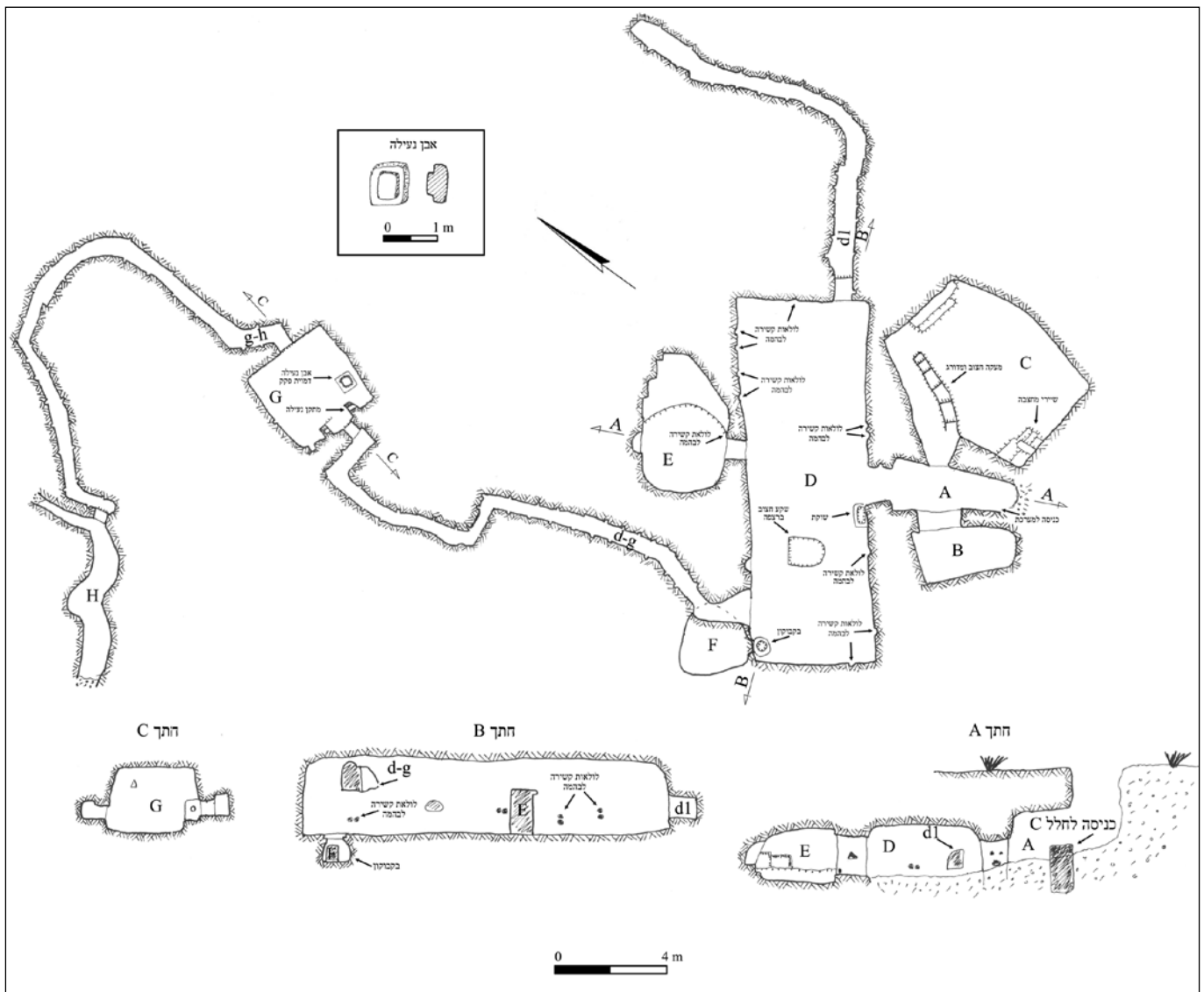


Fig. 10 – Plan and sections of hiding complex at Khamlet Qeis (courtesy of Eitan Klein and Alon Klein).  
 Fig. 10 – Pianta e sezioni del complesso di rifugi a Khamlet Qeis (per gentile concessione di Eitan Klein e Alon Klein).

(2) a complex containing crawlways and/or narrow, low passages connecting disused installations that were converted into hideouts (fig. 11a, e b). The up-to-date corpus encompasses 439 hiding complexes located at 252 settlement sites, including approximately 90 sites not previously known to researchers (table 1 and fig. 12).<sup>3</sup> Dozens of hiding complexes included in the previous count are not in the present corpus due to the absence of clear typological features, particularly typical hiding crawlways. Dozens of subterranean complexes that do have crawlways might perhaps be added except that the data about them is incomplete and therefore they cannot be identified definitively as hiding complexes.<sup>4</sup> The

complexes added in the last decade were documented in three main regions: the northern Judean Hills (Beit El hills and southern Samaria), the Hebron hills, and the eastern Judean Shephelah. Most of them – 75 complexes at 53 sites – are in the highlands of Judea and Samaria. The total count of complexes in the central highlands thus currently stands at 112 complexes at 83 sites. Their distribution indicates that hiding complexes were used in the Early Roman period throughout the Jewish-populated areas in and around Judea. The available data on most of the recently added complexes makes it possible to date them on archaeological grounds. In this regard, the importance of the (not always possible) distinction be-

<sup>3</sup> In their recent book *The Bar Kokhba Revolt: The Archaeological Evidence*, Eshel and Zissu estimate the existence of more than 400 complexes at more than 160 Jewish settlement sites (Eshel & Zissu, 2020).

<sup>4</sup> E.g., the subterranean complexes uncovered at the following sites:

Kh. Samara (Shahar, 2000); Nahal Modi'im (Elisha, 2010); Kh. Abu Shawan (Cohen, 2016); Horbat Koziba (Cohen, 2016); Kh. el-Qasr (Magen, 2008); Kh. Aluz (Raviv, 2018b); Kh. Sarra (Raviv, 2018b); and Kh. el-Qusur (Zertal & Mirkam, 2016).



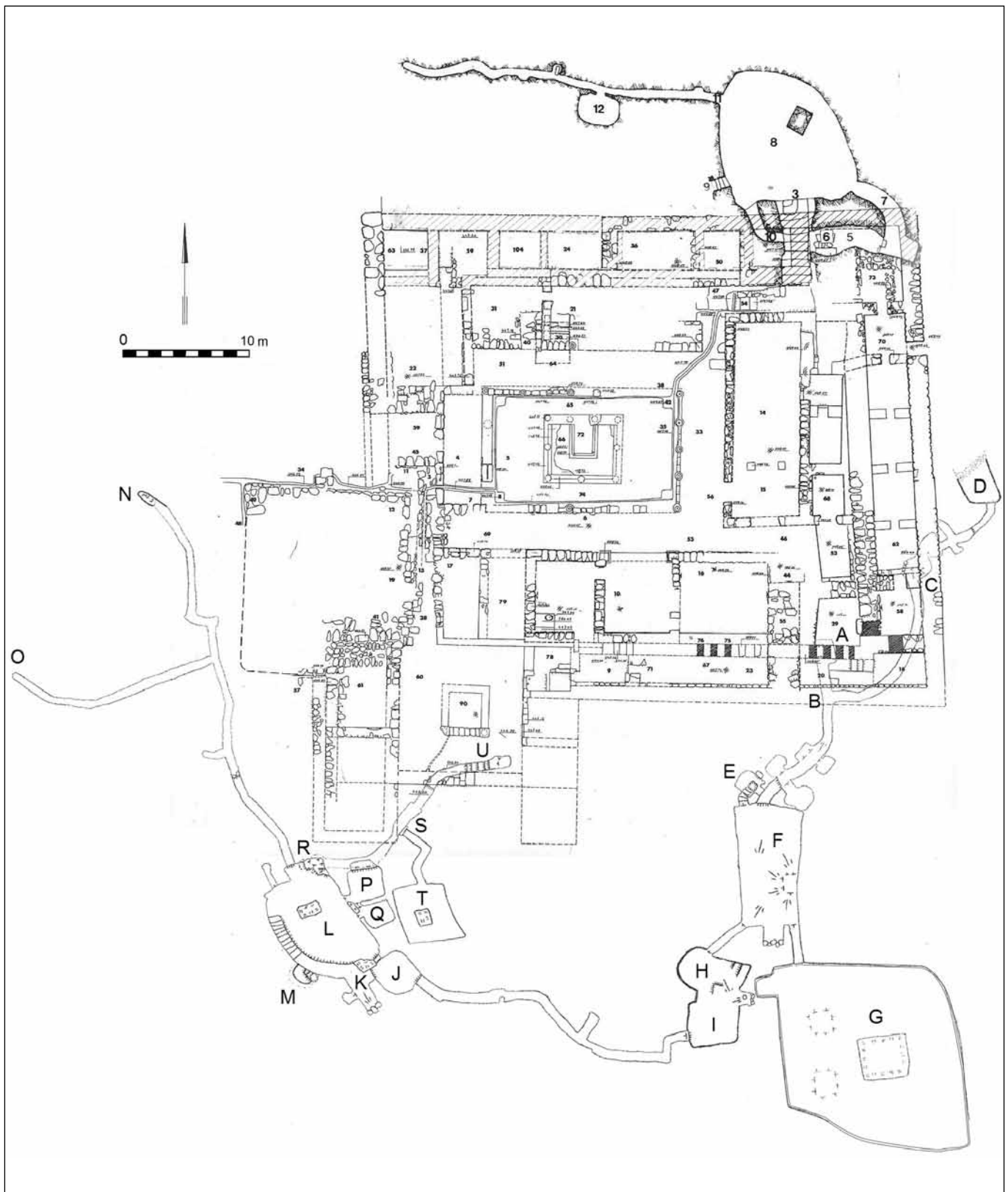


Fig. 11A – Plan of hiding complex at Kh. el Muraq - “Hilkiya Estate” showing the relationship of main buildings of the estate and underground cavities (by Boaz Langford and Dvir Raviv, upper buildings after Emanuel Damati).

Fig. 11A – Pianta del complesso di rifugi a Kh. el Muraq - “Tenuta Hilkiya” che mostra il rapporto tra gli edifici principali della tenuta e le cavità sotterranee (rilievo Boaz Langford e Dvir Raviv, edifici superiori da Emanuel Damati).

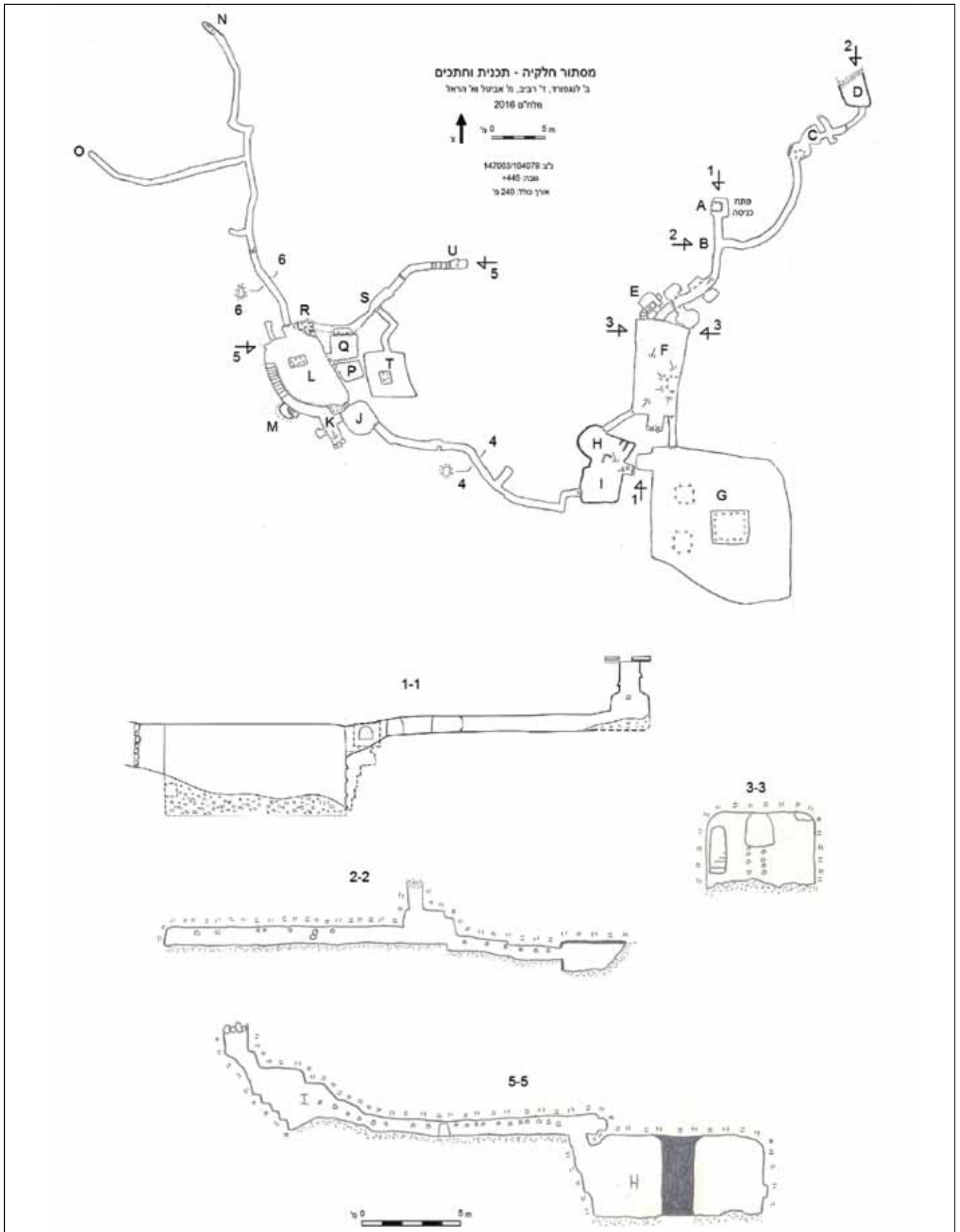


Fig. 11B – Sections of hiding complex at Kh. el Muraq - “Hilkiya Estate” (by Boaz Langford and Dvir Raviv, upper buildings after Emanuel Damati).

Fig. 11B – Sezioni del complesso di rifugi a Kh. el Muraq - “Tenuta Hilkiya” (rilievo Boaz Langford e Dvir Raviv, edifici superiori da Emanuel Damati).



No.	Name of Site	No.	Name of Site	No.	Name of Site	No.	Name of Site
1	Kh. Farsin	64	Kh. el Kereina (a)	127	H. Midras (7); (a; c)	190	H. Shem Tov (12); (a)
2	Tel Dothan	65	Kh. ed-Darish	128	Khallet Qeis (North); (a)	191	Kh. er-Ras
3	Kh. el-Hammam (2); (b;e)	66	Kh. Umm el-'Amdan (a)	129	Khallet Qeis (a)	192	Kh. et-Tayibeh (a)
4	Kh. Jabra (a)	67	Tel es-Sawan	130	Tel Adullam (a)	193	Kh. el-Bas (3)
5	Majdal (Tsur Nathan)	68	Kh. el-Wasset	131	H. 'Ethri (6); (c; e)	194	Khallet er-Ghuzaleh
6	Kh. Jar'a (a)	69	Kh. ez-Zeyit (a)	132	Yye'e Qidon	195	H. Hover
7	Hariqat Abu Far (west)	70	Beit Shenna (5); (a)	133	Mesad Hachlil	196	H. Ezra (a)
8	Kh. Sarisia (a)	71	Kh. Harfush	134	H. Berakhot (2); (a)	197	Kh. en-Naqa (4); (a)
9	Kh. Kefar 'Atia (2); (a)	72	Tel Sha'alabim	135	Tel Lavnin (2)	198	Rasm ed-Duweir
10	Kh. 'Arara	73	Tel Gezer (4); (b)	136	Kh. Kelafa (a)	199	Kh. Rasem Nufal
11	Kh. Nabuh (a)	74	Kh. Deir 'Asi (b)	137	H. Qerumit (9); (b)	200	H. Egoz
12	Tel Shiloh (2); (d)	75	Jeba (2)	138	H. Burgin (3); (a)	201	H. Boser
13	Kh. el-Marjim (2); (a)	76	H. 'Aqed (2); (a)	139	Kh. er-Rasm (Triang. Point 479)	202	Kh. el-Far'ah
14	Ramat Gan, Derech Ha'Tayyasim (a)	77	H. 'Almit (3); (a; e)	140	H. Tanim (2)	203	H. Dahan (a)
15	Kh. Bar'ish (b)	78	Pisgat Ze'ev Site (2); (e)	141	Tel Gedor (2); (a)	204	Kh. Beit el-Ban
16	Ras et-Tawil	79	Shmurat Shayarot Site (c)	142	Tel Tekoa	205	H. Qasra
17	Kh. 'Ali (2); (a)	80	Kh. 'Ain Mazruq (2)	143	H. Afal	206	Kh. Rasm Dahneh (2); (a)
18	Ras 'Amar (d)	81	Yad Benjamin Site (a)	144	H. Alim (2); (a)	207	H. Qasatin
19	Kh. Jib'it (d)	82	H. Shovav (a)	145	Kh. Jimrin	208	Duweimeh (2); (a)
20	Kh. Kulason (2); (a)	83	Kefar Uriah (2)	146	Kh. 'Ain Dab	209	H. Migdal Gad
21	Kh. el-Mesharqa (a)	84	H. Hamadah (a)	147	'Ain Arrub (3)	210	H. Tut (a)
22	Kh. Fassa (a)	85	Tel Tsor'a	148	H. Tabaq (3); (a)	211	H. Gever
23	Kh. Si'a (a)	86	Tel Bet Shemesh (6); (a)	149	H. Rafi'a (3); (a)	212	Rasm er-Rusum (5); (a)
24	H. Burnat South (a)	87	H. Ganim	150	H. Rafi'a (Lower)	213	Qasr Firjas
25	Kh. Burj el-Lisaneh (2); (a)	88	Unnamed Site, S-E, of Kh. 'Aqdeh (2); (a)	151	H. Qeit	214	Kh. el-Muraq -Hilkiya Estate (2); (a)
26	Kh. Rushnieh (b)	89	Deir Aban	152	H. Reshem	215	H. Zeita (4); (c)
27	Kh. Desarah (2); (d)	90	Sur Baher (e ?)	153	H. Yonim	216	H. Maish
28	Oqef Shoham (2); (a)	91	Umm Tubah	154	Kh. el-'Ain (2); (a)	217	Ahuzat Hazan
29	Shoham-44 (a)	92	Unnamed Site N-W of 'Ain Qobi	155	Kh. Kufin (a)	218	H. Hazan (b)
30	Kh. Hanuneh (a)	93	Nahal Gillo Site (2); (b)	156	Kh. Hatta	219	Beit Awa (2)
31	Triang. Point 277 (2)	94	H. Husham (a)	157	'Araq Halla (5)	220	Kh. Khazneh
32	Kh. Beit Qofah (2); (a)	95	Ramat Bet Shemesh Interchange (3); (c)	158	Kh. Jalla (a)	221	H. Ginatta
33	Kh. es-Shuneh & Beit 'Uweis (7); (a)	96	Tel Zanoah	159	Kh. Falah	222	Kh. A-Ryeh
34	Ben Shemen Interchange (9); (a)	97	H. Geres	160	Kh. 'Atos (a)	223	Nahal Adoraim
35	Kh. ed-Dekakin (2); (a)	98	Kh. el-Kih (d)	161	Yye'e Nahash (b)	224	Tel Agra
36	Kh. Zebdah (a)	99	Beit Sahur	162	Kh. Kila (Q'eilah)	225	Bani Dar (a)
37	Kh. en-Neby 'Annir (a)	100	Wadi Fukin	163	H. Gibor (b)	226	H. 'Eton (2); (a)
38	Kh. en-Nejmeh (b)	101	Kh. Shumeila N-E	164	H. Barak N (2)	227	Kh. es-Sikeh
39	Triang. Point 149 (b)	102	Tel 'Azekah (5)	165	Kh. Kharuf	228	H. Naqiq (3)

No.	Name of Site	No.	Name of Site	No.	Name of Site	No.	Name of Site
40	Kh. el-Mash'ar (b)	103	Kh. Atrabeh	166	Nuba	229	H. Tawas
41	H. Hermeshit (3)	104	Bad el-Banat (3); (a)	167	H. Senobar (2); (c)	230	Umm es-Shaqef (a)
42	Kh. Sheikh 'Issa (b)	105	Kh. Sabur	168	H. Za'auqa	231	H. Benayya
43	er-Ras (el 'Arbain) Midieh (2); (a)	106	H. Beten	169	Kh. Ras el-Jorah	232	H. Motz
44	Kh. Abu ed-Danin (2); (a)	107	Kh. el-Qatt	170	Kh. el-Hanazir	233	H. Gomer
45	el Qa'adeh	108	H. Ba'alan	171	H. Bet-Lam	234	H. Kishor
46	Kh. Karikur (a)	109	Kh. Ismalla	172	Maresha	235	Beit Mirsim
47	Kh. el-Maqatir (3)	110	Er-Rasm	173	Petorah	236	Horeisah
48	Kh. Beit Raduf (1)	111	Kh. Judraya (a)	174	H. Maresha West (a)	237	Beit 'Amra (a)
49	el-Khirbeh (Nesher Ramleh); (36); (c; e)	112	H. Sefyion (a)	175	H. Quqyyia	238	H. Moran 1 (a)
50	H. Regev	113	Kh. 'Arrib	176	Kh. es-Saffa	239	H. Za'aq (a)
51	Ha'Mutsav Site (2); (a)	114	H. Zichri (b)	177	Kh. Jamrura (a)	240	Tel Ma'on
52	Kh. Beit Anabeh (Mekorot); (a)	115	Me'arot Resen	178	Kh. Shubraqa (11); (a)	241	Susia (c)
53	Triang. Point 164	116	Me'arot Luzit	179	H. Horesh	242	Es-Samo'a (a)
54	Kh. Abu Nafa (a)	117	Kh. En-Natash (b)	180	Kh. ed-Duweir (3); (a)	243	Rujum el-Hamiri (a)
55	H. Kefar Ruth (a; c ?)	118	H. Sid (2)	181	H. Lehem	244	'Anab el-Kabir (a)
56	H. Ashun (3); (a)	119	H. Bet Bad (a)	182	H. 'Amuda (2)	245	H. Rimmon (2)
57	Kh. Deir Hassan (3); (a)	120	Tel Socho	183	H. 'Amudim	246	Nahal Eshtemoa Site (a)
58	H. Tittorah (3); (a)	121	Kh. Jamjum (a)	184	Giv'at Ge'ada (2)	247	Kh. Jeneba
59	Kh. 'Abarjin (a)	122	H. Qanim	185	H. Bet Loya (2)	248	H. 'Anim
60	Kh. Najmet el-Hadli (2); (d)	123	H. Orbah	186	H. Bet 'Elem	249	H. Salit (a)
61	Triang. Point 273 (b)	124	H. 'Elit (a)	187	Kh. el-Basha	250	H. Qatta
62	Kh. Kafr Nateh (a)	125	H. Ribbo	188	H. Tsohar	251	Nahal Yattir Site
63	Kh. Nisieh (2)	126	Me'arot Shu'a Umm e-Loz); (a)	189	Idneh (Kh. e-Tel); (2)		

tween finds representing the use of cavities and underground installations prior to the hiding complex and finds representing the hiding phase should be emphasized.<sup>5</sup> The current corpus also includes new information that can be used to date several previously published complexes.

If we examine all the hiding complexes in the present corpus, we can suggest dates for 202 of them (at 142 sites) on the basis of findings in the inner sections of the complexes or the relative chronology. In 139 of the complexes (at 109 sites), findings were dated with certainty to the period between the revolts or the Bar

Kokhba Revolt<sup>6</sup>; the findings of 28 other complexes (at 18 sites) have been dated roughly to the first or second century CE. A total of 37 complexes (at 17 sites) contained items from the first century CE, and 24 complexes (at 7 sites) contained items from the first century BCE. The finds from the first century BCE and the first century CE were often located in earlier installations that had been incorporated into the hiding complexes; therefore, they cannot be used to date the hiding stage. In any case, 1st century BC findings were found in at least 10 complexes (at 5 sites) and 1st century BC finds in 28 complexes (at 12 sites), all in

<sup>5</sup> Hiding complexes are dated based on two main factors: the discovery of objects in interior parts of the complex (i.e., sealed cavities with no openings or passages connecting them directly with the surface) and relative chronology (i.e., the relationship between the architectural components of the complex and earlier and later installations).

<sup>6</sup> The finds were dated to this period on the basis of parallels to assemblages that have been dated with certainty to the Bar Kokhba Revolt. Despite the morphological similarity in the ceramic and glass assemblages between the late Second Temple period and the period between the revolts, there are several "index fossils" for this period (see, e.g., Zissu, 2001; Adan-Bayewitz *et al.*, 2016; Terem, 2016).



internal sections used for hiding. Significantly, in most of the complexes that contained finds from 70-136 CE (129 of the 142 complexes), no earlier artifacts were discovered. These data support the standard assumption that most of the hiding complexes were created during the period between the revolts and at the time of the Bar Kokhba Revolt. A review of the geographical distribution of complexes with finds from the late Second Temple period, as well as those with finds from 70-136 CE, shows their presence throughout the area of the Jewish settlement in Judea (fig. 12).

## The typology and chronology of the hiding complexes

The typology and chronology of the hiding complexes are studied by examining the archaeological finds and the written sources, especially Cassius Dio, Josephus, and the Rabbinic literature. The limited contribution of the written sources to this subject, and especially the ambiguity of Josephus's references to hideouts,<sup>7</sup> increase the importance of the archaeological evidence. Any discussion of the archaeological record requires meticulous examination of data from surveys and excavations, taking into account the methodological difficulties involved.<sup>8</sup> It is particularly important to consider the location of the finds within the complexes, the few sites where hiding complexes and sometimes the buildings above their entrances were excavated, and the sites of complexes abandoned in the first century CE.

Preliminary typological and chronological conclusions of research into the hiding complexes were drawn in the 1980s. Based on Cassius Dio's description and the finds in the complexes in Judea and the Galilee, Kloner and Tepper (1987) proposed attributing the use of hiding complexes solely to the time of the Bar Kokhba Revolt. In contrast, M. Aviam (1983) suggested, based on finds in hiding complexes in the Galilee, that hiding complexes were first used during the Jewish War (66-70 CE). At the beginning of the 21st century, Kloner and Zissu noted two main groups of hiding place complexes in Judea: small, family-based hiding places and large, public hiding places (Zissu, 2001; Kloner & Zissu, 2003). In their opinion, small, family-based hiding complexes, such as those uncovered in excavations at Horbat 'Ethri and Pisgat Ze'ev, were created in the early first century CE, whereas most of the complexes, including the large, sophisticated ones, were created at the time of the Bar Kokhba Revolt. This proposal, which is well established among researchers, is also generally consistent with the most recent findings of hiding place complexes in Galilee (Shivtiel, in press). Nevertheless, most scholars have attributed the first

appearance of the Galilee complexes to the Jewish War, although they have sometimes been classified as grain storage facilities (Kloner *et al.*, 2008).

The results of excavations carried out in the past decade in complexes at several sites in Judea and the Galilee enable us to reconsider the typology and chronology of the hiding complexes. Renewed excavations by E. Klein and associates at Horbat 'Ethri in 2015 and 2016 uncovered small hiding complexes whose creation has been dated to the second century or the first half of the first century BCE (Zissu *et al.*, 2021). It includes a crawlway with a sharp turn, an element previously unknown in Second Temple period hiding complexes. Another hiding complex with a fairly intricate plan was uncovered not long ago at Einot Sho'im in the Lower Galilee. It was excavated by U. Leibner *et al.* and dated to the late Second Temple period. Artifacts from the first century CE (along with some from the second century CE) were found in interior cavities used for hiding (Leibner *et al.*, 2015).<sup>9</sup>

The most important site for understanding the typology of the hiding complexes is Nesher-Ramla (El-Khirbe) in the Lod Shephelah. Excavations conducted by A. Melamed between 2006 and 2015 uncovered 55 subterranean complexes, some of them interconnected, that the excavators defined as hiding complexes (Melamed, 2020). In 42 of the complexes there were numismatic and ceramic finds from the Late Hellenistic and Early Roman periods, in addition to architectural components that could be used to determine the relative chronology. Based on the finds, Melamed believes that the complexes at the site evolved organically over a long period of time, starting in the first half of the first century BCE or perhaps even earlier. In his opinion, the complexes at the site were not all created at the same time in preparation for a particular military event; rather, they were developed and used by the local residents until the Jewish War, and a few may have been in use even in the period between the revolts. Some of the complexes are relatively large and include a number of architectural components previously unknown in the hiding complexes of the Second Temple period: multiple entrance shafts, a crawlway with two sharp turns, a hidden access to a cistern, and locking installations. According to Melamed, there is no difference between the Nesher-Ramla complexes and those in the rest of Judea and the Galilee, so the chronology of the hiding complexes cannot be determined based on their typology (Melamed, 2020, 300-303).

However, a review of the excavation reports on the Nesher-Ramla site combined with the data from the hiding complexes in Judea and Galilee as a whole indicates that Nesher-Ramla is an exceptional site that does not tell us anything about the overall phenomenon. A review of the excavation data presented in the

<sup>7</sup> For references and a discussion of the subject see Kloner & Tepper (1987) and Shivtiel (2016). The bottom line is that it is impossible to be absolutely sure about Josephus's references to the use of hideouts; at most we can suggest a distinction between a natural cavity (υπονομος) and an artificial one (σηλαιος).

<sup>8</sup> On the methodological difficulties of studying the hiding complexes see Zissu (2001) and Raviv (2018b).

<sup>9</sup> Notably, it is not clear from the finds whether the complex was completely carved out in the first century CE or whether it was enlarged in the period between the revolts (second century CE).

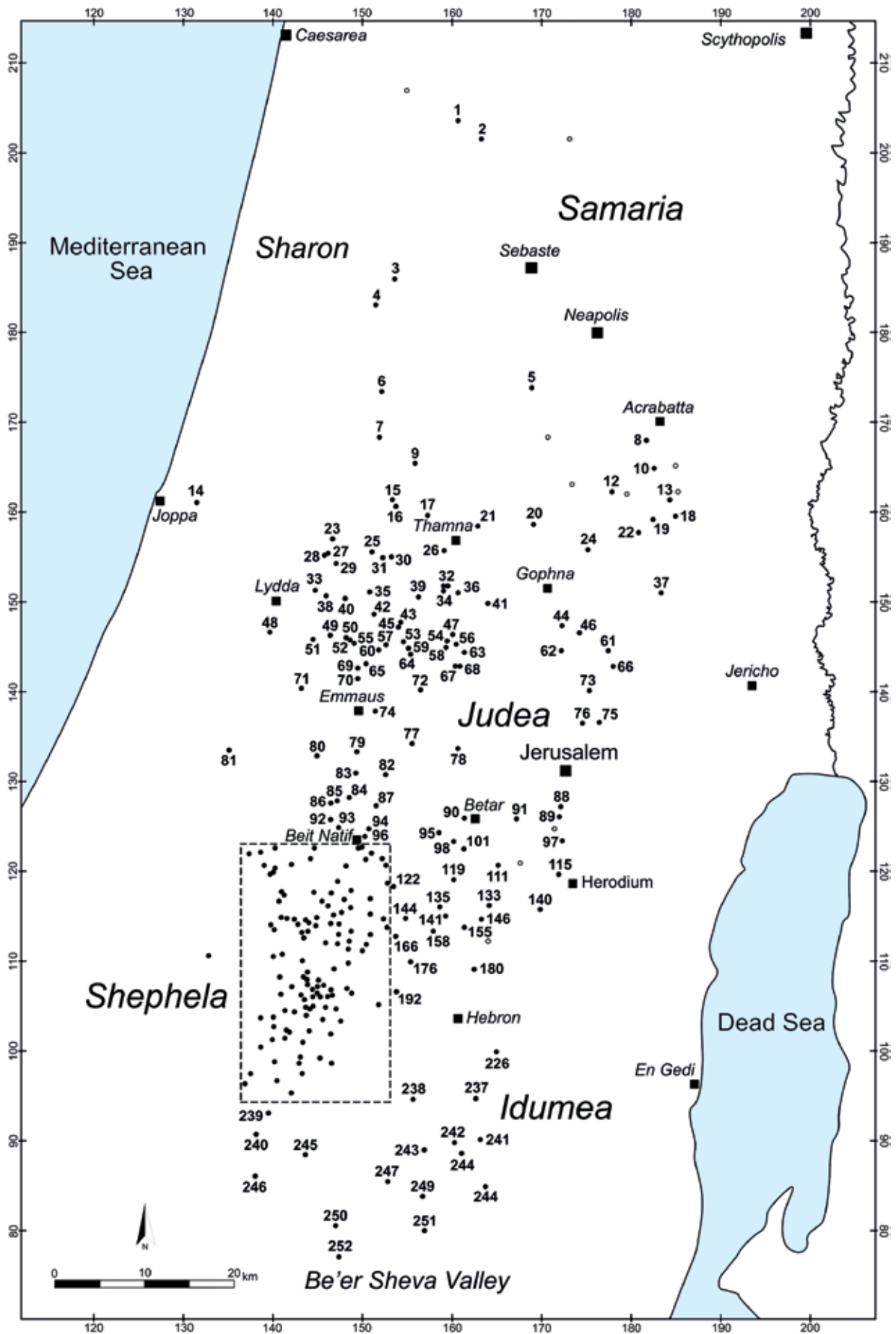


Fig. 12 – Distribution map of Judean hiding complexes (drawing Dvir Raviv).

Fig. 12 – Mappa della distribuzione dei complessi di rifugi sotterranei della Giudea (grafica Dvir Raviv).



report enables us to consider Melamed's conclusions: First, the Nesher-Ramla finds reflect the difficulty of distinguishing between hiding and storage complexes. Fifteen of the alleged hiding complexes at the site do not qualify as such due to the absence of crawlways one of the distinguishing characteristics of hiding complexes. Instead, they seem to have been designed for concealed storage.<sup>10</sup> Second, if we consider the location of the datable finds in the Nesher-Ramla complexes, which mostly represent the first century BCE and the first century CE, we see that many of them were discovered in entrance shafts or storage areas and therefore cannot be used to date the hiding stage. Third, based on finds dated definitively to the period between the revolts, some of the complexes at the site may have been carved out then and not before.<sup>11</sup> Fourthly, based on the earliest artefacts found in the interior sections of the hiding places of the Nesher-Ramla complexes and other sites in Judea and Galilee, we can date the initial use of the hiding places to no earlier than around the middle of the 1st century BCE. Fifth and most important : in contrast to what the Nesher-Ramla excavators claim, it is possible to study the typology of hiding place complexes on a chronological basis: we merely compare the typology of the complexes at this site and other complexes in Judea and the Galilee that have been dated with certainty to the Second Temple period with that of large hiding complexes at many sites in Judea that have been dated with certainty to the second century CE.

On the basis of the finds so far, we can propose a typological-chronological subdivision broadly into two groups of hiding complexes: simple complexes from the 1st century BC until the Jewish War; and intricate complexes from the period between the uprisings and the Bar Kokhba Revolt.

Simple complexes are characterized by the reuse of previous storage cavities; narrow, low passages and relatively short crawlways (just a few meters long) of various shapes and sizes; and, occasionally, crawlways with one or two sharp turns, crawlways or passages that allow for hidden access to cisterns, and locking installations. The last two components are definitive indications of the purpose of the complexes in which they are found to hide people. Among the simple complexes are a small subgroup that consist mainly of a crawlway leading to an inner hiding chamber.

The intricate complexes are characterized by a uniform plan in terms of shape and size of their components. They include long crawlways (tens of meters long) with a fairly standardized section, crawlways with several sharp turns and changes in level, crawlways with rock-cut chambers along their length, crawlway entrances that can only be reached by a hard climb, and earlier installations that had fallen into disuse and were converted to meet the needs of

the fugitives. In addition, there are two components that were rare in previous complexes: square hiding chambers (excavated at the time of the creation of the hiding place) and an escape system that consists of a hidden, two-way underground passage from a protected space inside the settlement to various areas inside and outside the settlement.<sup>12</sup>

It should be emphasized that despite the typological division proposed here, some of the complexes cannot be assigned definitively to either group. The hiding complexes in Judea can be classified as follows: about a third are simple, a third are intricate, and a third (most of them not properly documented) are indeterminate. A comparison of the architectural plans of the highland complexes to those in the Shephelah reveals a significant typological difference: whereas in the Shephelah most of the complexes are intricate and large, in the highlands most are simple, relatively small, and characterized by the extensive use of earlier cavities and installations. Because the finds from the highland complexes are mostly dated to the period between the revolts and the time of the Bar Kokhba Revolt, presumably the main factor behind the typological difference is the geology – hard limestone and dolomite in most parts of the highlands, as opposed to the soft chalk of the Shephelah – and not the date they were hewn. An important conclusion derived from this is that hiding complexes in the Judean Hills cannot usually be dated on typological grounds, but only on the basis of a small number of archaeological finds or relative chronology.

Examination of the architectural features of the simple complexes supports the idea that the use of hiding complexes was a further development and sophistication of storage complexes in the Early Roman period (Zissu *et al.* 2021). In some cases, the archaeological assemblages in the simple complexes indicate that the complexes were used during the revolts against Rome as well; presumably this often entailed furthering hewing and development. The architectural features and geographical distribution of the intricate complexes support the standard assumption that they were made in a specific period of time as part of the Jewish settlements' well-organized preparations for the Bar Kokhba Revolt.

The proposed typological division is supported by the finds in hiding complexes in Galilee. The data from the Galilee complexes were summed up recently by Y. Shvitiel (2019), who listed 74 hiding complexes at 43 settlement sites. Shvitiel noted two main features that characterize the Galilee complexes as opposed to those in Judea: the prominent repurposing of earlier installations to use as hideouts; and the simple plan and modest dimensions of the Galilee complexes (Shvitiel, 2019). In his opinion, we can distinguish between small, roughly and incompletely carved com-

<sup>10</sup> Complexes 272, 297, 299, 366, 379, 423, 430, 455, 614, 633, 766, 789, 790, 791, 811 (Melamed, 2020).

<sup>11</sup> E.g., complexes 256, 317, 423, 593, 719-755, 789, 819 (Melamed, 2020).

<sup>12</sup> These components are in addition to crawlways or passages that allow concealed access to cisterns and locking installations, features which are fairly rare in the earlier complexes.

plexes, which represent the Jewish War, and meticulously carved complexes, which can be attributed to the second century CE. However, the absence of clear criteria for distinguishing between rough and meticulous carving and the possible influence of the type of rock on the creation and preservation of the complexes make this distinction difficult. In keeping with the typological division proposed above, we can identify more than 50 Galilee complexes that can be classified as simple ones, but just a few intricate ones.<sup>13</sup> Those finds from the Galilee complexes that can be used for dating purposes support the chronology proposed above: Early Roman period finds have been reported in 30 of the simple complexes (and the second century CE is represented in half of these as well), whereas objects from the second century CE were discovered in the intricate complexes. This picture is consistent with our information about the limited role of the Galilee in the Bar Kokhba Revolt (for a bibliography on the subject, see Mor, 2016). Even though the Galilee researchers have proposed attributing the initial use of hiding complexes to the Jewish War, the typology and chronology of the hiding complexes in Judea enables us to suggest that simple hiding complexes were first carved out in the Galilee, too, as early as the first century BCE.

### The purpose of the hiding complexes

The question of the function of the hiding complexes is directly related to their typology and chronology. As mentioned, at the beginning of the 21st century, researchers speculated that the use of hideout com-

plexes began in Judea and Galilee in the Second Temple period and reached its peak during the Bar Kokhba Revolt. Accordingly, small, simple complexes were classified as storage and hiding installations from the Second Temple period and the Jewish War, whereas large, intricate ones were classified as hideouts and military bases from the Bar Kokhba Revolt (for a bibliography see Dar, 2015). Based on the architecture of the hideout complexes, some researchers have questioned the hypothesis that they were used by the rebels as military bases and have also suggested that they were used as hiding places and storage facilities for the civilian population. (Aviam, 1983; Negev, 1985; Mor, 2016). This opinion was recently supported by Melamed, based on the typology of the Neshet-Ramla complexes (Melamed, 2020). However, as argued above, an overall examination of the hiding complexes points to Neshet-Ramla as an exceptional site. An examination of the data on hiding places in Judea and Galilee allows us to consider the conclusions of these researchers. Firstly, the results of this study support the idea that hiding places were a further development and refinement of earlier storage facilities as a way of creating hidden and protected spaces for people from the 1st century BC onwards. Secondly, the small number of complexes with findings dated to the 1st century BCE suggests that the hiding places were not used extensively during the Jewish war.<sup>14</sup> Third, based on the data on hiding complexes from the period between the revolts and the time of the Bar Kokhba Revolt, we can suggest that hiding complexes were widely used then by both the civilian population and the fighters.<sup>15</sup>

### Conclusion

Updating the corpus of hiding complexes in Judea with systematic attention to dating and typology gives us a more precise understanding of various aspects of these installations. The findings of the study support the proposal that the hiding complexes were a further development and sophistication of storage installations, starting in the first century BCE, in order to create protected spaces for people. Our information supports the assumption that the hiding complexes reached their peak of architectural sophistication and their maximum geographical extent in the period between the revolts and during the Bar Kokhba Revolt.

The updated geographical distribution of hiding complexes, and especially of those complexes containing finds from 70-136 CE, indicates for the first time that they existed throughout the area of Jewish settlement in the highlands and foothills of Judea and Samaria. This area encompasses Judea as demarcated in Josephus's accounts (*Jewish War* 3.51-56), as well as nearby regions to the north – the southern Samaria hills, the western Samaria slopes, and the Nabata area.

A systematic review of the finds from the complexes and their architectural components enables us to update the typology and chronology of the use of hideouts. Contrary to the claim of the excavator of the Neshet-Ramla site, the fundamental distinction between simple complexes from the Second Temple period and intricate complexes from the second century CE as shown by Kloner and Zissu (2003; 2009) is still valid, although the criteria

<sup>13</sup> At Kh. Ruma, El-Khirbe (complex 1), Kafr Qana (complex A at Kh. Huweiha) and perhaps Shunam, Dabura, Hukok, and Meroth (for a bibliography see Shvitzel, 2019).

<sup>14</sup> In this context, it is worth noting a group of hiding complexes, most of them intricate, associated with buildings and fortified settlements from the time of the Bar Kokhba Revolt.

<sup>15</sup> In this context, it should be noted that with the exception of one small hiding complex at Yodfat (Aviam, 2005), so far no hid-

ing complexes have been found in fortifications from the time of the Jewish War, such as Gamla, Herodium, Masada, Kh. Kefar Mur, and Machaerus (Mukawir). Moreover, evidence from Jerusalem shows that the city's waterworks and various domestic installations were used for hiding and movement purposes during the Jewish War but not that sophisticated underground infrastructure was prepared for military purposes (Gibson & Lewis, 2019).



for distinguishing between simple and intricate require some refinement. Nevertheless, it seems that in many cases, such as the highland complexes carved out of hard or crumbling rock, the complexes cannot be dated on a typological basis, but only on the basis of a small number of finds or on relative chronology. In conclusion, it seems that the last word on the hiding complexes has yet to be said. Hopefully, future excavations and investigations will allow us to further refine our knowledge on the topics discussed here.

## References

- Adan-Bayewitz D., Asaro F., Osband M., Wieder M., Giauque R. D., 2016, *Pottery production and historical transition: new evidence from the Jerusalem area in the Early Roman period*. *Cathedra*, vol. 160, pp. 7-28 (Hebrew).
- Aviam M., 1983, *The contribution of secret tunnels in the Galilee to research on secret tunnels*. *Niqrot Zurim*, vol. 7, pp. 53-59 (Hebrew).
- Aviam M., 2005, *Yodefot: a case study in the development of the Jewish settlement in the Galilee during the Second Temple period*. Ph.D. dissertation, Bar-Ilan University (Hebrew).
- Cohen C., 2016, *The Jewish settlement in northern Hebron ridge from the late Second Temple period to the Bar Kokhba Revolt*. Master's thesis, Bar-Ilan University (Hebrew).
- Dar S., 2015, *The function of the underground complexes during the Bar-Kokhba war*. In *the Highland's Depth*, vol. 5, pp. 111-122 (Hebrew).
- Ein Mor D., Storchan B., Levy D., Landes-Nagar A., 2019, *The settlement pattern along the Emmaus-Kiryat Ye'arim-Jerusalem road: in light of new archeological evidence from the 2nd century BCE until the 2nd century CE*, in: Y. Zelinger & N. Frankel (eds.), *Studies on the Land of Judea: Proceedings of the 3rd Annual Conference in Memory of Dr. David Amit*, Kefar Etzion, pp. 47-71 (Hebrew).
- Elisha Y., 2010, *Nahal Modi'im*. *Hadashot Arkheologiyot*, vol. 122. [http://www.hadashot-esi.org.il/report\\_detail\\_eng.aspx?id=1599&mag\\_id=117](http://www.hadashot-esi.org.il/report_detail_eng.aspx?id=1599&mag_id=117).
- Eshel H., Zissu B., 2020, *The Bar Kokhba Revolt: the archaeological evidence*, Jerusalem.
- Foerster G., 1983, *Do the subterranean hideaways date from the period of Bar-Kokhba?* *Cathedra*, vol. 28, pp. 155-157 (Hebrew).
- Gibson S., Lewis R., 2019, *The subterranean tunnel system beneath Christ Church near Jaffa Gate: evidence of guerilla warfare and a refugee hideaway from the time of Titus' siege of Jerusalem*. *New Studies in the Archaeology of Jerusalem and Its Region*, vol. 13, pp. 18\*-56\*.
- Klein E., Raviv D., 2012, *In the footsteps of ancient documents and inscriptions: hiding complexes in the southern Hebron Hills*. *Judea and Samaria Research Studies*, vol. 21, pp. 89-106 (Hebrew).
- Kloner A., Tepper Y., 1987, *The hiding complexes in the Judean Shephelah*, Tel Aviv (Hebrew).
- Kloner A., Zissu B., 2003, *Hiding complexes in Judaea: an archaeological and geographical update on the area of the Bar Kokhba Revolt*, in: P. Schafer (ed.), *The Bar Kokhba War Reconsidered: New Perspectives on the Second Jewish Revolt against Rome*, Tübingen, pp. 181-216.
- Kloner A., Zissu B., 2005, *Hiding complexes in Judaea: An archaeological and geographical update on the area of the Bar Kokhba war*, in: M. Mor, J. Pastor, I. Ronen & Y. Ashkenazi (eds.), *For Uriel: Studies in the History of Israel in Antiquity Presented to Professor Uriel Rappaport*, Jerusalem, pp. 125-147 (Hebrew).
- Kloner A., Zissu B., 2009, *Underground hiding complexes in Israel and the Bar Kokhba Revolt*, *Opera Ipogea*, 1-2009, pp. 9-28.
- Kloner A., Zissu B., 2016, *The Bar Kokhba war: archaeological aspects and updates*, in: G. Dolev (ed.), *Bar Kokhba: Historical Memory and Myth of Heroism*, Tel Aviv, pp. 47-88 (Hebrew).
- Kloner A., Zissu B., Shahar Y., 2008, *The Great Revolt in the Galilee and the hiding system phenomenon in the Land of Israel*, in: O. Guri-Rimon (ed.), *The Great Revolt in the Galilee*, Haifa, pp. 91-100 (Hebrew).
- Leibner U., Shvitiel Y., Distefeld N., 2015, *An early Roman hiding complex at 'Enot Sho'im, central lower Galilee*. Tel Aviv, vol. 42, no. 1, pp. 127-143.
- Magen Y., 2008, *Late Roman and Byzantine towers in the southern Hebron hills*, in: A. Malka (ed.), *Judea and Samaria Researches and Discoveries (JSP 6)*, Jerusalem, pp. 217-246.
- Melamed A., 2020, *Underground hiding complexes and installations at Neshet-Ramla quarry*, Haifa.
- Mor M., 2016, *The second Jewish revolt: the Bar Kokhba war 132-136 CE*, Boston.
- Negev A., 1985, *Were the underground cave warrens really hiding complexes?* *Niqrot Zurim*, vol. 11-12, pp. 21-32 (Hebrew).
- Oppenheimer A., 1982, *Jewish sources concerning the subterranean hideaways in the time of Bar Kokhba*. *Cathedra*, vol. 26, pp. 24-29 (Hebrew).
- Raviv D., 2018a, *Khirbet Kelafa: a Jewish settlement from the late Second Temple period until the Bar Kokhba revolt in the north-western Hebron hills*, in: Y. Zelinger & N. Frankel (eds.), *Studies on the Land of Judea: Proceedings of the 3rd Annual Conference in Memory of Dr. David Amit*, Kefar Etzion, pp. 55-66 (Hebrew).
- Raviv D., 2018b, *Settlement in south Samaria during the Hellenistic and Roman periods according to archaeological surveys*. Ph.D. dissertation, Bar-Ilan University (Hebrew).
- Raviv D., Langford B., 2017, *"The Hilkiya hideaway": a large hiding complex at the border between the Shephela and the Judean Mountains*, in: Y. Zelinger & N. Frankel (eds.), *Studies on the Land of Judea: Proceedings of the 1st Annual Conference in Memory of Dr. David Amit*, pp. 57-69 (Hebrew).

- Raviv D., Stripling S., Farhi Y., 2020, *A hiding complex from the two revolts against the Romans at Khirbet el-Maqatir in the eastern Bethel hills*. Near East. Archaeol. Soc. Bull., vol. 65, pp. 1-23.
- Shahar Y., 2000, *Har Hemelekh: a new solution to an old puzzle*. Zion, vol. 65, pp. 275-306 (Hebrew).
- Shivtiel Y., 2011, *The uniqueness and distribution of "hiding complexes" in the Galilee: update and re-evaluation*. Cathedra, vol. 142, pp. 7-26 (Hebrew).
- Shivtiel Y., 2016, *"Because of Midian the people of Israel made for themselves the dens which are in the mountains, and the caves" – historical sources for the use of rock-cut caves in times of distress*. In the Highland's Depth, vol. 6, pp. 175-200 (Hebrew).
- Shivtiel Y., 2019, *Cliff shelters and hiding complexes: the Jewish defense methods in Galilee during the Roman period*, Göttingen.
- Shivtiel Y., in press, *The Galilee and the Bar Kokhba Revolt: a different perspective on the Galilee's participation in the revolt in light of evidence from hiding complexes*, in: S. Binder, E. Ratson, Y. Shivtiel (eds.), "A Work of Wisdom" (Exod. 35:33): Studies in Honor of Professor Bezalel Bar-Kochba, part 1 [Te'uda 32-33] (Hebrew).
- Terem S., 2016, *Jerusalem and Judaea in the first and early second century C.E.: continuity and change in the ceramic culture*. Ph.D. dissertation, Bar-Ilan University (Hebrew).
- Yadin Y., 1982, *Comments on the role of hideaways in Bar-Kokhba's strategy, and some notes on documents of Bar-Kokhba*. Cathedra, vol. 26, pp. 43-46 (Hebrew).
- Zelinger Y., 2009, *Rural settlements in the Shephela of Lod (Lydda) during the Second Temple period*. Ph.D. dissertation, Bar-Ilan University (Hebrew).
- Zertal A., Mirkam N., 2016, *The Manasseh hill country survey, vol. 3: From Nahal 'Iron to Nahal Shechem*, Leiden.
- Zissu B., 2001, *Rural settlement in the Judaeen Hills and Foothills, from the late Second Temple period to the Bar Kokhba Revolt*. Ph.D. dissertation, Hebrew University of Jerusalem (Hebrew).
- Zissu B., Klein E., Ganor A., and Goldenberg G., 2021. Archaeological excavations of rock-cut underground storage chambers at Horbat 'Ethri and the chronology of Judean hiding complexes. *Speleology and Speleostology* 2021/2: pp. 72-87.

## Guidelines for Authors

Manuscripts, not published before, must be prepared in Italian or English language and sent in digital format, including figures and tables, to the Editorial Board.

### Referee

All items will be reviewed by two members of the Scientific Committee.

### Indications by the Editorial Board and Authors' instructions

- The articles must deal with speleology in artificial caves, or related studies and researches.
- Authors must indicate their affiliation, which will be shown on the first page of the manuscript.
- In case the manuscript is written by two or more Authors, the reference Author must be indicated (name, surname, postal address, E-mail).
- Length of the manuscript must not exceed 50,000 spaces, including the figures. In exceptional circumstances, the matter will be examined by the Editorial Board.
- Figure captions must be presented in Italian and English.

### Organization of the text

- Starting from the first page, the manuscript must include: Italian title (Arial 24 pt), English title (Arial 9 pt), name and surname of Authors (Century schoolbook *italic* 12 pt), address and affiliation of Authors (Century schoolbook 9 pt), extended abstract in Italian (Arial 9 pt), abstract in English (Arial 9 pt), key words (in Italian and English) (Arial 9 pt).
- The manuscript written in English must be preceded by an English abstract and an extended Italian abstract (maximum length 1,000 spaces).
- The title must be written in Arial 24 pt, left alignment. The 1<sup>st</sup> order sub-titles must not be numbered, and must be written in Arial bold 12 pt, left alignment; the 2<sup>nd</sup> order sub-titles must be written in Arial 12 pt, left alignment.
- All the figures must be cited in the text, numbered progressively in Arab numbers between brackets (Fig. 1, Tab. 1). In the context of a sentence, the figure may also be indicated as: ... in figure ...
- Notes must be placed as footnotes.
- References in the text must be indicated Century schoolbook 10 pt between brackets, as follows: Author, year (separated by a comma). In case of more works, these must be indicated in chronological order, separated by a semi-colon (i.e. Bianchi & Rossi, 1999; Verdi et al., 2000). Multiple articles by the same Author, published in the same year, must be indicated with lower case letters after the year (i.e.: Bianchi 1999a; Bianchi 1999b).
- In case of long and repeated names in text, these must be fully indicated when cited the first time, and followed by its acronym between brackets, as in the following example: Tufo Giallo Napoletano (TGN). The acronym will be used in the following text.
- Cardinal points must be fully indicated in lower case letters (i.e.: north, east south east from Rome). Directions must be indicated in upper case letters (i.e.: N-S; ESE-WNW).
- Measurement units must belong to the International System (km, m, cm, mm); in case of ancient measurement units, the equivalent metric unit must be shown between brackets.
- Authors are responsible of the manuscript sent for publication, also as regards copyright of pictures and drawings.

### Acknowledgements

- Acknowledgements at the end of the text must be preceded by the word **Acknowledgements** in Arial Bold, 10 pt, left alignment.

### References

- The reference list must include all the references cited in the text.
- Articles in preparation cannot be cited, whilst articles effectively in press (already accepted for publication) may be cited.

- The references must be listed at the end of the text, in alphabetical order, after the word **References**, Arial bold, 10 pt, left alignment. The references must be prepared in according to the following example: Ietto A., Sgrosso I., 1963, *Sulla presenza di una stazione paleolitica in un riparo sotto roccia nei dintorni di Cicciano (Nola)*. Boll. Soc. Nat. in Napoli, vol. 2, pp. 26-30. (Arial 8,5 pt)

### Figures

- The figures must be numbered progressively, and accompanied by the English and Italian captions.
- Photographs must be of high quality, in 300 dpi resolution. In case of historical photos a high quality scan is required.
- Letters and numbers must be, after printing, between 1 and 5 mm. The use of Arial or Helvetica font (font size not lower than 6-8 pt) is recommended.
- All the maps and topographic surveys must present a metric scale, and indication of North.
- In case of figures from published papers, the source must always be indicated (and fully reported in the reference list).
- The Editorial Board may modify the size of figures proposed by the Author.
- The caption must always include indication of the author of the photograph or drawing.
- The Italian caption use Arial 9 pt, for the English caption use Arial Italic 9 pt

### Digital copy

Manuscripts must be prepared in Word Windows 97 - 2003 or later versions, following these guidelines. The complete manuscripts must include text, drawings and photographs (300 dpi resolution), and be sent exclusively on CD-Rom or DVD-Rom.

Photographs and figures must be in format .tif or .jpeg with 300 dpi resolution.

The materials must be sent exclusively to "Editorial staff Opera Ipo-gea" at STUDIO SAJ - Corso Magenta 29/2 - 16125 Genoa, Italy, or by e-mail (use WeTransfer or similar) To: [maxman@unimol.it](mailto:maxman@unimol.it) and Cc: [studiosaj@aruba.it](mailto:studiosaj@aruba.it)

**Delivery time:** to publish on the first annual number of the journal (first semester) send materials within mid-March each year; to publish on the second number (second semester) send materials within mid-September each year.

**ALL MANUSCRIPTS PREPARED NOT IN ACCORDANCE TO THESE GUIDELINES WILL BE SENT BACK TO AUTHORS.**

EDITOR IN CHIEF: Stefano Saj

EDITORIAL DIRECTOR: Massimo Mancini

EDITORIAL BOARD: c/o Stefano Saj - Corso Magenta 29/2, 16125 Genoa, Italy - [studiosaj@aruba.it](mailto:studiosaj@aruba.it)

BOOKS REVIEWS: Roberto Bixio - [roberto\\_bixio@yahoo.it](mailto:roberto_bixio@yahoo.it)

SUBSCRIPTIONS AND SALES: Fabrizio Milla - [fabrizio.fabus@libero.it](mailto:fabrizio.fabus@libero.it)

<http://www.operaipogea.it>

 operaipogea



