Figure 178: Collection locality of *Iurus asiaticus.* **Top.** Çamlıyayla Plateau, Çamlıyayla District, Mersin, Turkey. **Bottom.** Kaşlıca Village area, Tut District, Adıyaman, Turkey, 1183 m a.s.l. Most eastern locality of *Iurus asiaticus*.

Figure 179: Collection locality of *Iurus asiaticus*, Yaylaüstü Village fork in the road to Andırın, Kahramanmaraş, Turkey.

Figure 180: Collection locality of *Iurus asiaticus.* Maden Village, Bolkar Mts**,** Niğde, Turkey, 1710 m a.s.l.

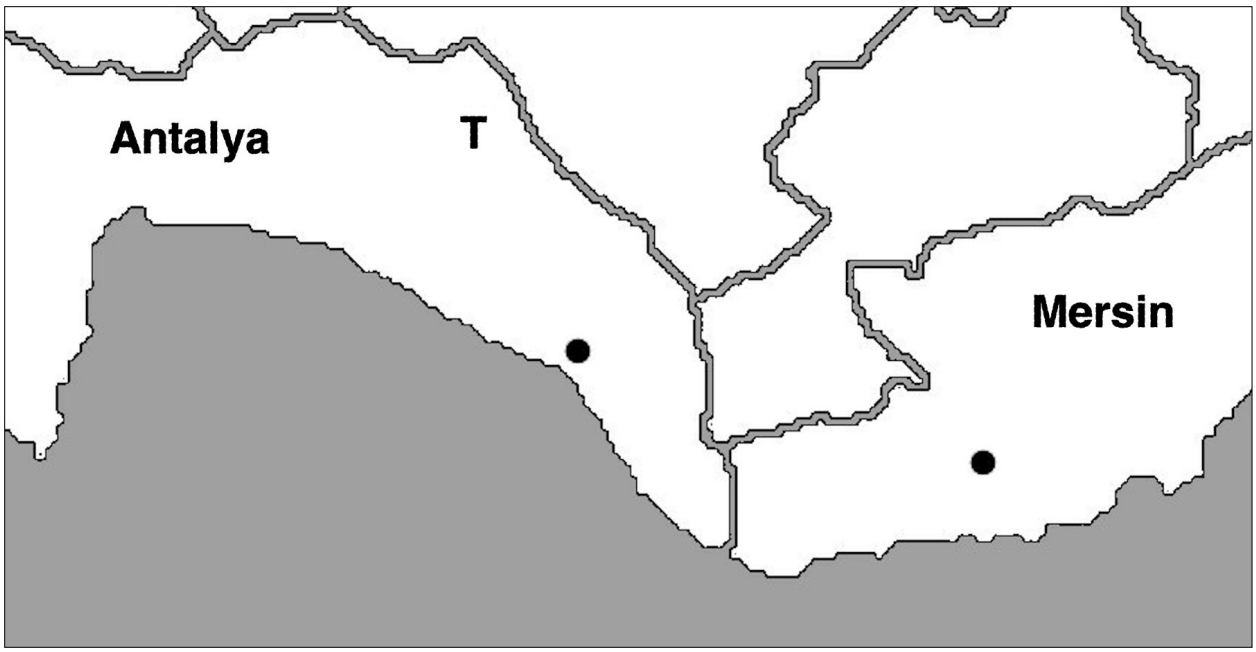


Figure 181: Large-scale map showing distribution of *Iurus kadleci*, **sp. nov**. "T" marks type locality, Akseki, Antalya Province, Turkey. See Fig. 74 for distribution of all species and Appendix A for detailed locality data.

Iurus kadleci Kovařík, Fet, Soleglad et Yağmur, sp. nov.

(Figs. 7, 24, 35, 40, 52, 60, 73, 74, 181–197; Tabs. 1, 7–9)

REFERENCES:
Iurus dufoureius: Soleglad, Kovařík & Fet, 2009: 2 (in part; Akseki).

Holotype: ♀ (FKCP), TURKEY, *Antalya Province*: Akseki District, 12 km S Akseki, 11–12 May 2006, leg. F. Kovařík. **Paratypes**, see list below.

Diagnosis. Medium to large species, 90 mm. Red in overall coloration, chelae darkened. Pectinal tooth counts 10–12 (11.17) males, 10–11 (10.25) females. Chelal movable finger lobe in adults located on mid-finger or distally, lobe ratio 0.53–0.56; conspicuous proximal gap of fixed finger present in *both* adult males and females; movable finger of adult males essentially straight, not highly curved; number of inner denticles (*ID*) of chelal movable finger 11; most slender species in the genus, as exhibited in the metasoma, telson, and chela: metasomal segments thin, all longer than wide in both genders, subadults as well as adults (see Table 8 for morphometrics); chelal palm thin, chela length/palm depth (3.40) male, (3.32) female; telson thin, telson length/telson width (4.34) male, (4.29) female; constellation array with *nine* sensilla; hemispermatophore unknown. Tergities I–VI smooth; lateral carinae of metasomal segments II–IV obsolete. Dominate morphometrics are metasoma segment and telson lengths (see Appendix C).

Distribution. **Turkey** (south): Antalya and Mersin Provinces. See map in Fig. 181 for large-scale distribution of this species.

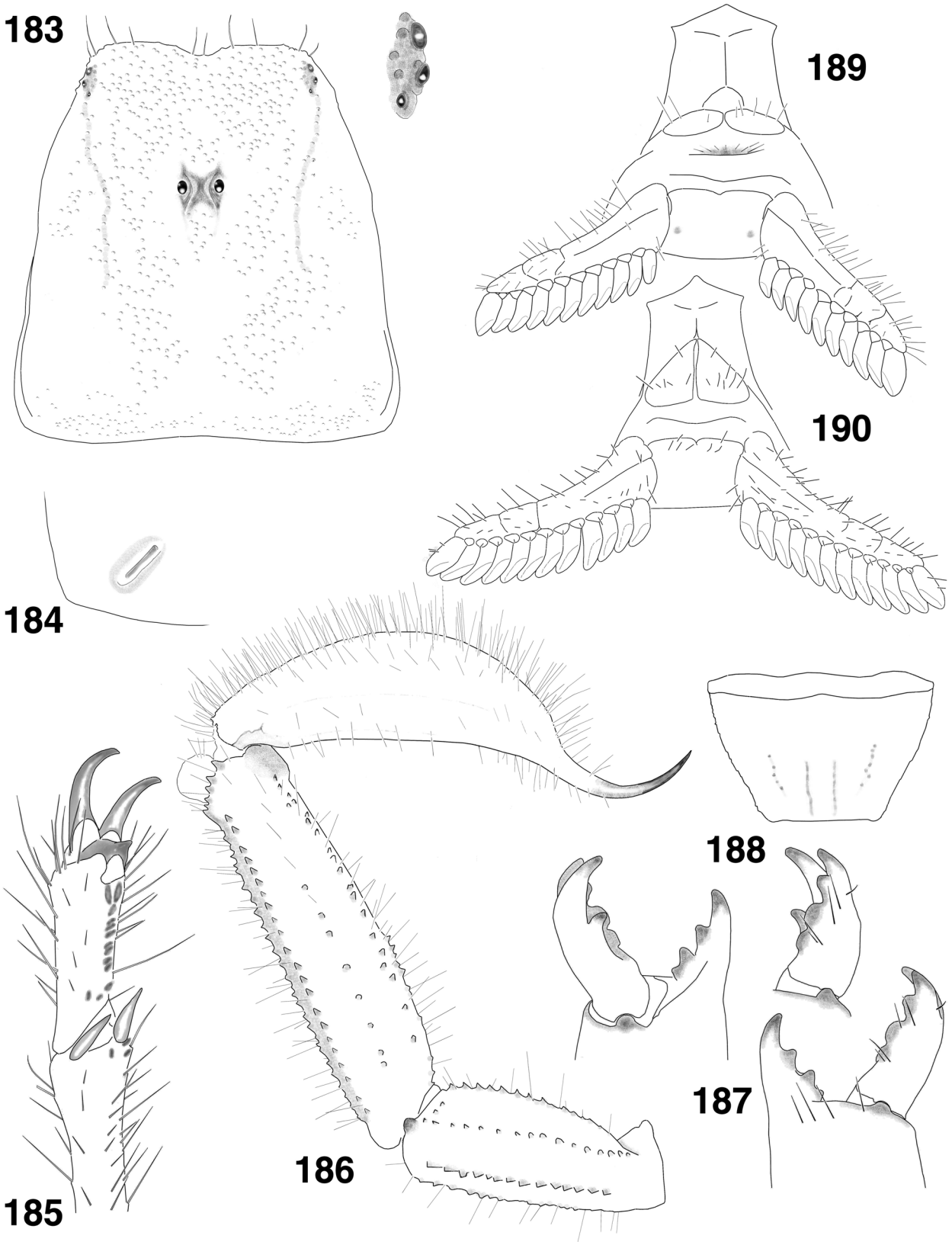
Etymology. Named after the Czech coleopterist Stanislav Kadlec (27.12.1948–31.12.2008), who visited Turkey with FK and helped in collecting the type specimens.

FEMALE. Description based on holotype female from Akseki, Antalya, Turkey. Measurements of the holotype plus two other specimens are presented in Table 7. See Figure 182 for a dorsal and ventral view of the female holotype.

COLORATION. Basic color of carapace, mesosoma, metasoma, telson, pedipalpal femur and patella reddish-brown; legs slightly lighter; chelae much darker, carinae dark gray to black, intercarinal areas dark red; leg condyles, chelal finger dentition, and telson aculeus dark brown; median and lateral eyes black. Essentially void of patterns except for lighter areas between carapace carinae.

CARAPACE (Fig. 183). Anterior edge with a conspicuous median indentation, approximately ten irregularly placed setae visible; entire surface densely covered with small

Figure 182: *Iurus kadleci,* **sp. nov.**, dorsal and ventral views. Adult female holotype (FKCP) (97 mm), 12 km S. Akseki, Antalya, Turkey.



Figures 183–190: *Iurus kadleci*, **sp. nov.,** Akseki, Antalya, Turkey. **183–189.** Female holotype. **190.** Male paratype. **183.** Carapace and close-up of lateral eyes. **184.** Stigma. **185.** Tarsus and partial basitarsus, left leg IV. **186.** Telson and metasomal segments IV–V, lateral view. **187.** Right chelicera, dorsal and ventral views. **188.** Sternite VII. **189.** Sternopectinal area. **190.** Sternopectinal area.

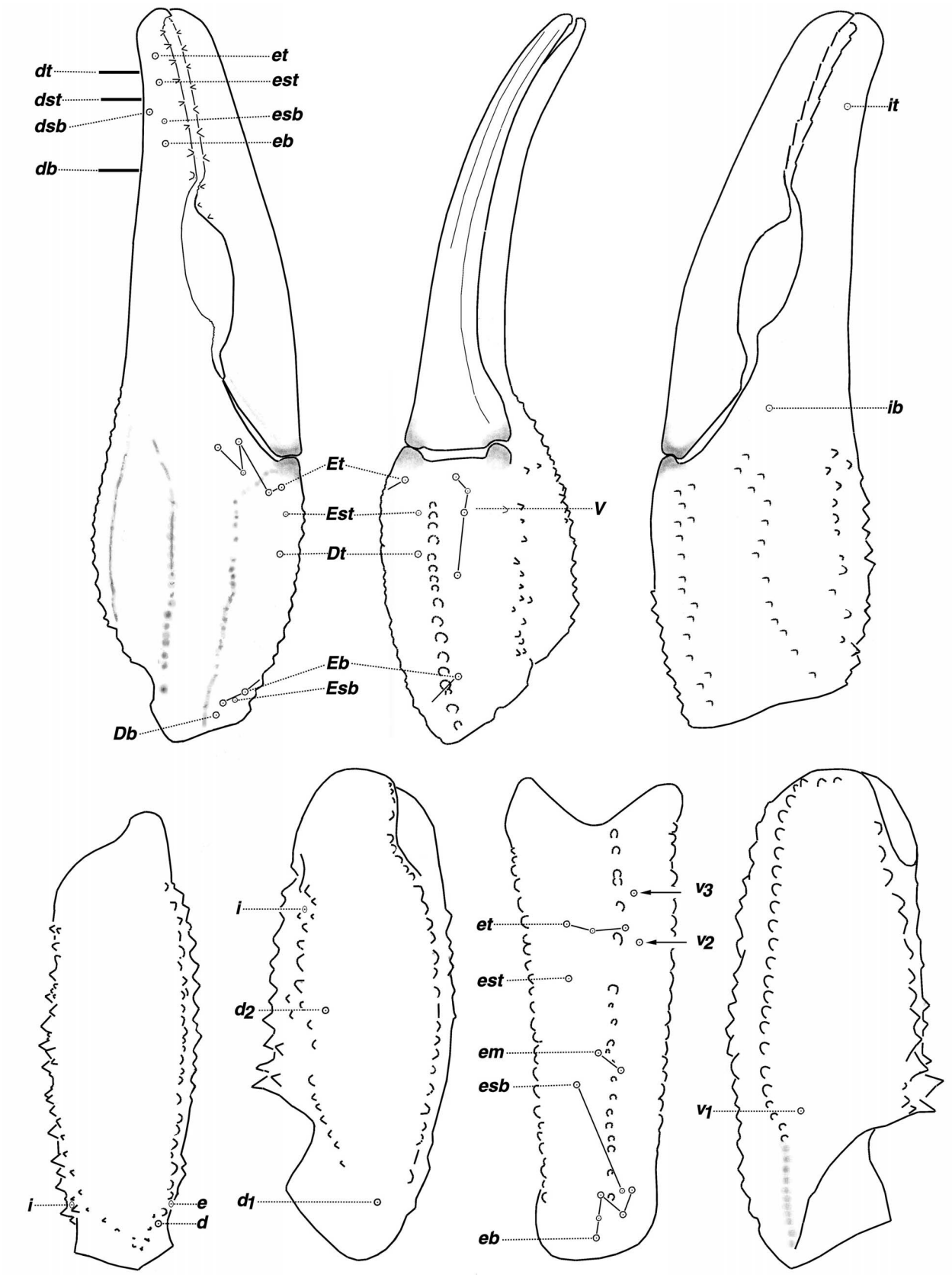
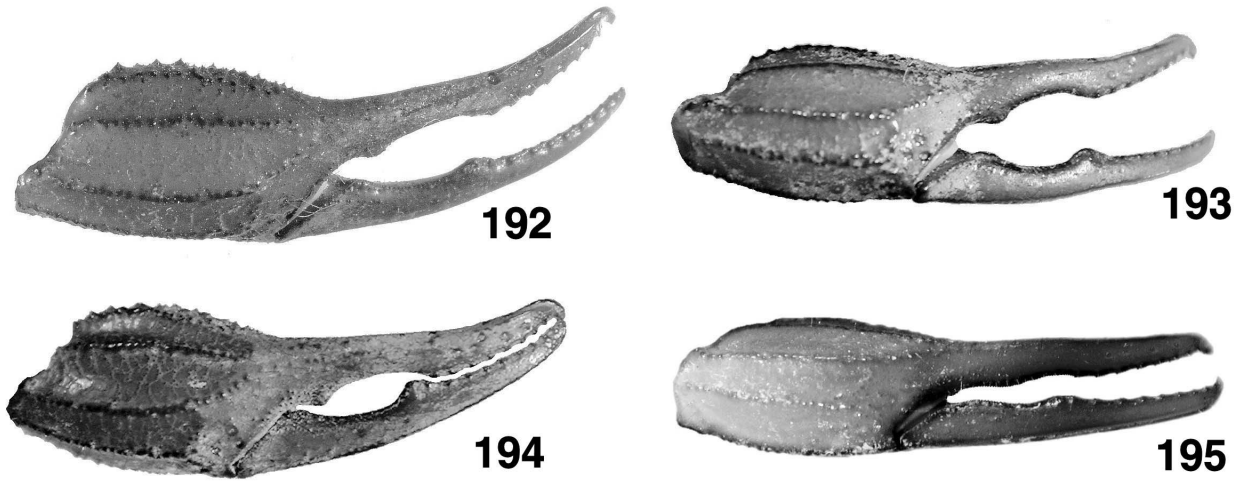


Figure 191: Trichobothrial pattern of *Iurus kadleci* **sp. nov.**, female holotype. Akseki, Antalya, Turkey.



Figures 192–195: Chela, lateral view, *Iurus kadleci* **sp. nov. 192–194.** Adults, Akseki, Antalya, Turkey. **192–193.** Male. **194.** Female. **195.** Subadult female, Dim Cave, Antalya, Turkey. Note in the adults, Figs. 192–194, the distally position movable finger lobe and exaggerated fixed finger proximal gap. In particular, Fig. 194, the proximal gap is also conspicuous in the adult female, unpredicated in *Iurus*.

granules, except for extreme lateral edges which are sparsely populated with granules. Mediolateral ocular carinae well-developed and granulated, extending to the lateral eyes; there are three lateral eyes, the posterior eye the smallest and facing inward. Median eyes and tubercle somewhat small, positioned anterior of middle with the following length and width formulas: 398|1150 and 133|958.

MESOSOMA (Figs. 184, 188). Tergites I–VI lacking granulation, but appearing somewhat rough at 10x; tergite VII covered with minute granules, lateral carinae serrated, median carinae not detectable. Sternites III–VI smooth and lustrous; VII with one pair of irregularly granulated lateral carinae and one pair of smooth median carinae (Fig. 188). Stigmata (Fig. 184) are medium in size and slit-like in shape, angled 45° in an antero-internal direction.

METASOMA (Fig. 186). All segments are longer than wide. Segments I–IV: dorsal and dorsolateral carinae serrated; dorsal carinae with 12/13, 13/12, 14/14, and 15/14 serrated spines (left/right carina); dorsal (I–IV) and dorsolateral (I–III) carinae do not terminate with an enlarged spine; lateral carinae irregularly serrated on I, absent on segments II–IV; ventrolateral carinae crenulated on I–III and crenulated to serrated on IV; ventromedian carinae irregularly granulated on I–II, crenulated on III, and crenulated to serrated on IV. Dorsolateral carinae of segment IV terminates at articulation condyle. Segment V: dorsolateral carinae serrated; lateral carinae sparsely serrated for two-thirds of posterior aspect; ventrolateral and single ventromedian carinae serrated; ventromedian carina not bifurcated, terminating in straight line. Anal arch with 14 serrated granules. Intercarinal areas of segments I–IV essentially smooth; segment V rough ventrally. Segments I–III with few setae ventrally; IV with dorsal and ventral setation; V with light to medium setation.

TELSON (Fig. 186). Vesicle extremely elongated with highly curved aculeus. Vesicle essentially void of granules; ventral surface densely covered with medium length straight reddish setae, dorsal setation much less dense, irregularly scattered; base of aculeus with setation ventrally and dorsally, slightly enlarged setal pair located on aculeus midpoint, areolae area not noticeably swollen. Vesicular tabs with small serrated granules ventrally.

PECTINES (Fig. 189, paratype male Fig. 190). Well-developed segments exhibiting length|width formula 970|345. Sclerite construction complex, three anterior lamellae and one large middle lamellae with slight indications of a smaller distal sclerite; fulcra of medium development. Teeth number 10/11. Sensory areas developed along most of tooth inner length on all teeth, including basal tooth. Scattered red setae found on anterior lamellae and distal pectinal tooth. Basal piece large, with subtle swallow indentation along anterior edge, length|width formula 330|490.

GENITAL OPERCULUM (Fig. 189). Sclerites elongate, wider than long, connected for entire length except for a swallow medial indentation on proximal edge (see discussion on male below).

	Iurus kadleci sp. nov.		
	Akseki, Antalya, Turkey		Dim Cave, Antalya, Turkey
	Female Holotype	Male Paratype	Subadult Female Paratype
Total length	97.00	92.20	74.85
Carapace length	11.50	11.10	9.30
Mesosoma length	33.50	28.45	25.35
Metasoma length	37.20	37.45	28.70
Segment I length/width	5.10/4.60	4.90/4.50	3.80/3.40
Segment II length/width	5.95/3.90	5.80/4.00	4.80/3.45
Segment III length/width	6.40/3.80	6.60/3.95	4.65/2.95
Segment IV length/width	7.35/3.45	7.65/3.40	5.45/2.70
Segment V length/width	12.40/3.20	12.50/2.95	10.00/2.60
Telson length	14.80	15.20	11.50
Vesicle length	10.25	10.80	7.55
width/depth	3.45/3.25	3.50/3.30	2.85/2.75
Aculeus length	4.55	4.40	3.95
Pedipalp length	46.55	45.65	38.00
Femur length/width	12.10/4.00	11.85/3.55	9.90/3.25
Patella length/width*	10.90/3.80	10.60/3.65	9.20/3.25
DPS height**	1.20	1.30	1.05
Chela length	23.55	23.20	18.90
Palm length	9.40	9.30	7.90
width/depth	5.60/7.10	5.30/6.50	4.35/5.40
Fixed finger length	12.20	11.90	10.00
Movable finger length	14.90	14.30	11.70
Pectines teeth	10-11	12-12	10-10
middle lamellae	1-1++	3-4	2-2
Sternum length/width	3.00/2.45	2.75/2.15	2.60/2.10

Table 7: Morphometrics (mm) of *Iurus kadleci* **sp. nov.** * Patella width is widest distance between the dorsointernal and externomedial carinae. ** DPS height is from tip of spines to dorsointernal carina.

STERNUM (Fig. 189). Type 2, posterior emargination present, well-defined convex lateral lobes, apex visible but not conspicuous; conspicuous membraneous plug situated proximally between lateral lobes; sclerite longer than wide, length|width formula 300|245; sclerite slightly tapers anteriorly, posterior-width|anterior-width formula 530|490 (see discussion on male below).

CHELICERAE (Fig. 187). Movable finger dorsal edge with somewhat worn dentition, with one large subdistal (*sd*) denticle; ventral edge with one large pigmented accessory denticle at finger midpoint; ventral edge serrula not visible. Ventral distal denticle (*vd*) slightly longer than dorsal (*dd*). Fixed finger with four denticles, median (*m*) and basal (*b*) denticles conjoined on common trunk; no ventral accessory denticles present.

PEDIPALPS (Fig. 191). Well-developed chelae, with medium to long fingers, heavily carinated, conspicuous scalloping on chelal fingers: well-developed lobe on movable finger, positioned beyond midpoint in ratio 0.55; conspicuous proximal gap present on fixed finger. **Femur:** Dorsointernal, dorsoexternal and ventrointernal carinae serrated, ventroexternal obsolete. Dorsal and ventral surfaces sparsely granulated, internal and external surface with line of 13 and 15 serrated granules, respectively. **Patella:** Dorsointernal and ventrointernal carinae serrated, dorsoexternal and ventroexternal crenulated, and exteromedian carina strong, serrated, and doubled on anterior median area. Dorsal surface with sparse rounded granules and ventral surface smooth; external surface with serrated exteromedian carina; internal surface smooth with well-developed, doubled DPS and VPS. **Chelal carinae:** Complies with the "8-carinae configuration". Digital (*D1*) carina strong, crenulated; dorsosecondary (*D3*) crenulated; dorsomarginal (*D4*) roughly serrated, doubled; dorsointernal (*D5*) irregularly serrated; ventroexternal (*V1*) strong and

	I. kraepelini	*I. asiaticus*	*I. kinzelbachi*	*I. dufoureius*
Meta-I (L/W) ♂	45 %	33 %	42 %	40 %
♀	47 %	35 %	42 %	35 %
Meta-II (L/W) ♂	27 %	22 %	22 %	20 %
♀	47 %	45 %	44 %	32 %
Meta-III (L/W) ♂	27 %	25 %	18 %	20 %
♀	38 %	32 %	30 %	23 %
Meta-IV (L/W) ♂	26 %	20 %	14 %	16 %
♀	32 %	26 %	21 %	16 %
Meta-V (L/W) ♂	20 %	25 %	13 %	30 %
♀	22 %	28 %	11 %	25 %
Tel_L / Tel_W ♂	28 %	27 %	18 %	34 %
♀	28 %	25 %	18 %	36 %
Che_L/Che_D ♂	47 %	13 %	16 %	18 %
♀	25 %	8 %	5 %	8 %

Table 8: Morphometric ratio Mean Value Differences (MVD) between *Iurus kadleci* **sp. nov.** and the other four species of *Iurus*. This data illustrates the relative slenderness of *I. kadleci* in metasomal segments, the telson, and the chelal depth. In particular, sympatric species *I. kraepelini* exhibits the largest MVDs, ranging from 20 to 47 percent. See Appendix C for a detailed discussion of the dominant morphometrics for all five *Iurus* species and histograms of important morphometrics.

	Average Number of Spines on Metasomal Dorsal Carinae *	**MVD % with *I. kadleci***
I. kadleci	10.50–13.38 (12.200) (±1.077) [005] {11.12–13.28}: 0.088	-
I. dufoureius	9.38–12.75 (10.548) (±0.808) [021] { 9.74–11.36}: 0.077	15.7 %
I. kinzelbachi	8.12–10.00 (9.030) (±0.487) [026] { 8.54–9.52}: 0.054	35.1 %
I. asiaticus	7.38–9.00 (8.175) (±0.445) [018] { 7.73–8.62}: 0.054	49.2 %
I. kraepelini	6.00–9.12 (7.807) (±0.719) [062] { 7.09–8.53}: 0.092	56.3 %

Table 9: Statistical data on the number of spines found on the metasomal dorsal carinae (segments I–IV) based on 132 samples. This data clearly shows that *I. kadleci* has the largest number of spines on the dorsal carinae, exhibiting 16 to 56 percent MVDs with the other species. * Counts are based on the average number of spines for segments I–IV, including both left and right carina. Statistical data group includes absolute range (mean) (±standard deviation) [number of samples] {standard error range}: coefficient of variability. MVD % = mean value difference percentage.

serrated, terminating slightly internal to external condyle of movable finger; ventrointernal (*V3*) irregularly serrated, continuous to internal condyle; external (*E*) strong, continuous, and serrated; internal (*I*) irregularly serrated. **Chelal finger dentition:** Number of median rows, internal denticles (*ID*), and outer denticles (*OD*) are difficult to determine due to conspicuous scalloping of the fingers. Median denticle (*MD*) row groups oblique and highly imbricated; 9 *ID*s to socket beginning on fixed finger and 10 *ID*s to lobe center on movable finger; 8 *OD*s to socket beginning on fixed finger and 10 *OD*s to lobe center on movable finger. No accessory denticles present. **Trichobothrial patterns (Fig. 191):** Type C, orthobothriotaxic, typical of genus.

LEGS (Fig. 185). Both pedal spurs present on all legs, lacking spinelets; tibial spurs absent. Tarsus with conspicuous spinule clusters in single row on ventral surface, terminating distally with a pair of enlarge spinule clusters. Unguicular spine well-developed and pointed.

HEMISPERMATOPHORE. Unknown in this species.

Male and female variability. Unique to this species is the conspicuous proximal gap present in the adult female. Its development is as strong as that in the male (Figs. 192–194). There is no significant sexual dimorphism in morphometrics except for the telson which is relatively longer in the male. For the metasomal segments all are longer than wide in both genders. Pectinal tooth counts in males exceed those of females by approximately one tooth, male 10–12 (11.17) [6], female 10–11 (10.25) [4] (see histograms in Fig. 73).

Figure 196: *Iurus kadleci,* **sp. nov.**, dorsal and ventral views. Adult male paratype (FKCP) (90 mm), 12 km S. Akseki, Antalya, Turkey.

Figure 197: *Iurus kadleci*, **sp. nov.**, dorsal view. Subadult paratype female, Dim Cave, Antalya, Turkey.

Figure 198: *Iurus kadleci*, **sp. nov.** Subadult paratype female shown 25 vertical meters deep inside Dim Cave, Antalya, Turkey.

Figure 199: *Iurus kadleci,* **sp. nov.** Adult male paratype (FKCP) (90 mm), 12 km S. Akseki, Antalya, Turkey.