

## Continued from Ans. Lot – 14 (Part I) ...

Field identification and segregation of Cobitids from Doon Valley.

### SEGREGATION

#### Lot 14.



The **Lot 14** includes some small-sized, **worm-like** to **fusiform** fishes, collectively labeled as **Cobitids (Loaches)**. They all were procured while dragging at the bottom through pebbly, sandy, muddy or weedy bed.

Their **field characterization** was done on the basis of **drab** or **light coloured** (greenish grey, brownish to drab yellowish) body **with spots, vertical bands, lateral band, tiger-like wavy bands, black ocellus at the base of upper caudal lobe, a dark vertical stripe / band at the base of caudal fin** and **prominent barbels** around mouth.



The segregation of **Lot -14** into Genera / Species can be done on the basis of the criteria decided in the field, as follows:

CHARACTERS OBSERVED IN THE FIELD	GENUS
1. Dark brown along the dorsum, the rest of body being yellowish white with dark brown specks coalescing to form a pattern of darker and lighter longitudinal bands; the mid-lateral one being darkest forming almost a black stripe. Fleshy mental lobes present.	<i>Lepidocephalichthys</i> [Family – Cobitidae; Subfamily – Cobitinae]
2. Mottled from the dorsum to lateral line; 13 – 14 short wavy bands descending downwards up to or beyond the lateral line; a	<i>Acanthocobitis</i> [Family – Balitoridae;

series of blotches below lateral line and a black ocellus at the upper extremity of caudal base, present.	Subfamily – Nemacheilinae]
3. Brownish, with 9 – 15 vertical bars and a prominent vertical black stripe / band at the base of the caudal fin; a dorsal, keeled adipose elevation at the caudal base.	<i>Schistura</i> [Family – Balitoridae; Subfamily – Nemacheilinae]

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## SEGREGATION OF GENERA INTO SPECIES



The samples from **Lot – 14**, segregated as belonging to **Genus – *Lepidocephalichthys*** are characterized as under:

**Body** worm-like, compressed, sometimes giving appearance of a ‘hunch’ (hump) at the summit of head (opposite the eye orbit). **Mouth** sub-terminal, narrow with thick lips. Lips thick, fleshy, continuous at the angles of mouth; lower one being interrupted in the middle. \***Barbels** 3 pairs (†**1 pair of rostral** and one pair maxillary and 1 mandibular); longer in males. **Mental lobes** (= deeply divided, posteriorly projecting lobes at lower lip) fleshy mid-ventrally; their corrugated skinny flaps with or without digitiform or coniform projections continuous at the angle of mouth with broad-based mandibular barbels. **Eyes** small, more dorsally placed, covered with transparent skin. **A backwardly directed retractable bifid suborbital spine** present; the outer prong being straighter, whereas, the inner one curved and only slightly longer than the outer one. **Origin of dorsal fin** variable in relation to the tip of snout and base of caudal fin as well as origin of pelvic fins. **7th and 8th inner pectoral fin rays** fused; more thickened and swollen (= osseous) in males with a vertical **osseous crest** (=lamina circularis), having maximum elevation almost at the middle of fused rays. **Caudal fin** truncate, emarginate, deeply emarginate or forked.

[\*Justin C. Havird and Lawrence M. Page (2010) in his publication, ‘A Revision of *Lepidocephalichthys* (Teleostei: Cobiotidae) with Descriptions of Two New Species from Thailand, Laos, Vietnam and Myanmar’, *Copeia* (1):137 - 159; observed different situation in case of 3 pairs of barbels, “..... : two rostral and one maxillary pair at the corner of mouth; pair of flaps on lower lip, each flap with thickened inner fold ending in small barbel-like projection.....”.]

†**The present observation:** In agreement with J.S. Nelson (2006) & J.S. Nelson and others (2016).

..... *Lepidocephalichthys*

**The samples found belonging to Genus – *Lepidocephalichthys* are represented by 2 species in the streams of Eastern and Western Doon Valley, characterized as under:**



**Body** dark-brown/blackish along the dorsum, dirty yellowish-white on the sides and whitish along the belly, with dark – brown specks coalescing to form a pattern of darker and lighter longitudinal bands, that along the flanks forming almost **black-stripe** from the tip of the snout (more prominent in **males**) to the base of caudal [less prominent in females and the area above and below it

is festooned with dark irregular blotches]; light, narrow stripes and interrupted wavy brown bands present above and below the lateral band, the upper one darkening towards the mid- dorsal line whereas the lower one fading into the whitish belly. Rectangular dashes (= mid-lateral black spots) absent. **Mental lobes** palmate mid-ventrally, with **2 digitiform** projections; the inner one being simple and shorter (more swollen/coniform in males) than the outer one which is a bit longer and often bifid. **Eyes** small, not bulging. **Pectoral fins** longer in males than in females; when viewed ventrally, a **wedge - shaped extension** is present from base to the tip of inner (7<sup>th</sup> and 8<sup>th</sup>) **pectoral fin rays of males** [in addition to the presence of a vertical crest or lamina circularis].

**Caudal fin** truncate, convex or cut-square with rounded corners or slightly emarginated; with rows of dark spots coalescing to form narrow **6 - 8 Σ - shaped bands** with wider interspaces. **Bases of all fins**, tinged –red.

..... *Lepidocephalichthys guntea*.

### PHOTOGRAPHS OF *Lepidocephalichthys guntea*



*Lepidocephalichthys guntea* (Male): Lateral view showing a ‘hunch’ (hump) at the summit of head (opposite the eye orbit); dark-brown/blackish body along the dorsum, dirty yellowish-white on the sides and whitish along the belly, with dark – brown specks coalescing to form a pattern of darker and lighter longitudinal bands, that along the flanks forming almost black-stripe from the tip of the snout to the base of caudal fin. The latter truncate, convex or slightly emarginated and cut-square with rounded corners; with rows of dark spots coalescing to form narrow 6 - 8 Σ – shaped bands with wider interspaces; also with a prominent/diffused black spot at its mid-upper base (blue arrow).

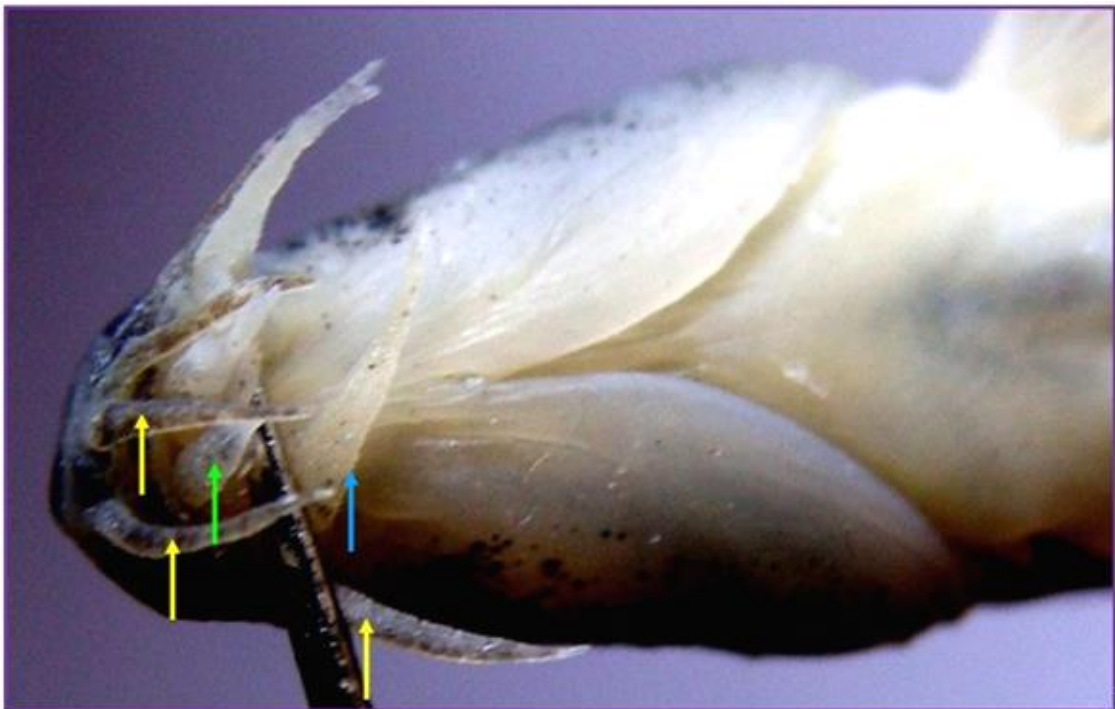




*Lepidocephalichthys guntea* (Female): Lateral view [1. Live specimen;2. Freshly preserved] showing a ‘hunch’ (hump) at the summit of head (opposite the eye orbit); dark-brown/blackish body along the dorsum, dirty yellowish-white on the sides and whitish along the belly, with dark – brown specks coalescing to form a pattern of darker and lighter longitudinal bands, that along the flanks forming a less prominent black-stripe and the area above and below it festooned with dark irregular blotches, from the tip of the snout to the base of caudal. Light, narrow stripes and interrupted wavy brown bands are present above and below the lateral band, the upper one darkening towards the mid- dorsal line whereas the lower one fading into the whitish belly. Caudal fin truncate, convex or slightly emarginated and cut-square with rounded corners; with rows of dark spots coalescing to form narrow 6 - 8  $\Sigma$  – shaped bands and wider interspaces; also with a prominent/diffused black spot at its mid-upper base (blue arrow). Bases of all fins, tinged –red [see live specimen No. 1].

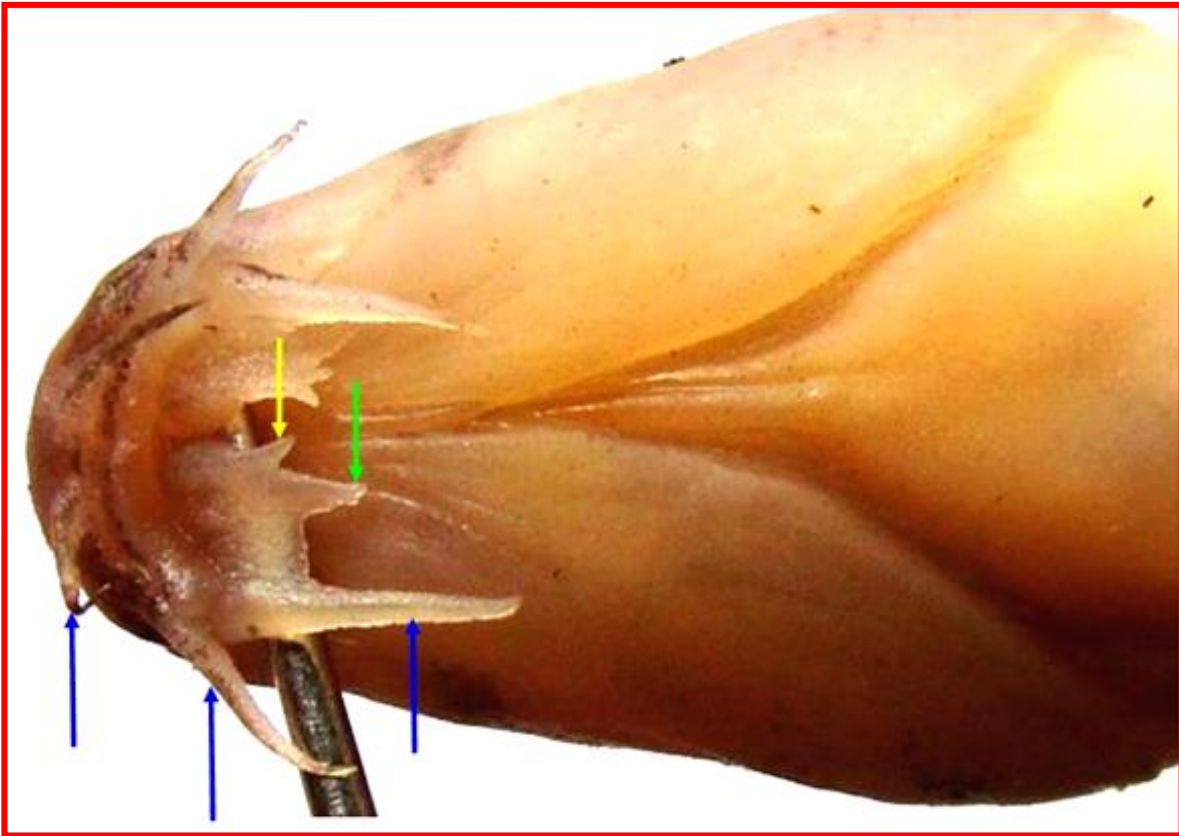


*Lepidocephalichthys guntea* (Female): Dissected view showing ovaries filled with eggs.



*Lepidocephalichthys guntea* (Male): Ventral view of head; showing 3 pairs of longer (than females) barbels (yellow arrows); mid-ventrally palmate mental lobes [= deeply divided, posteriorly projecting lobes at lower lip] with 2 digitiform projections; the inner one being

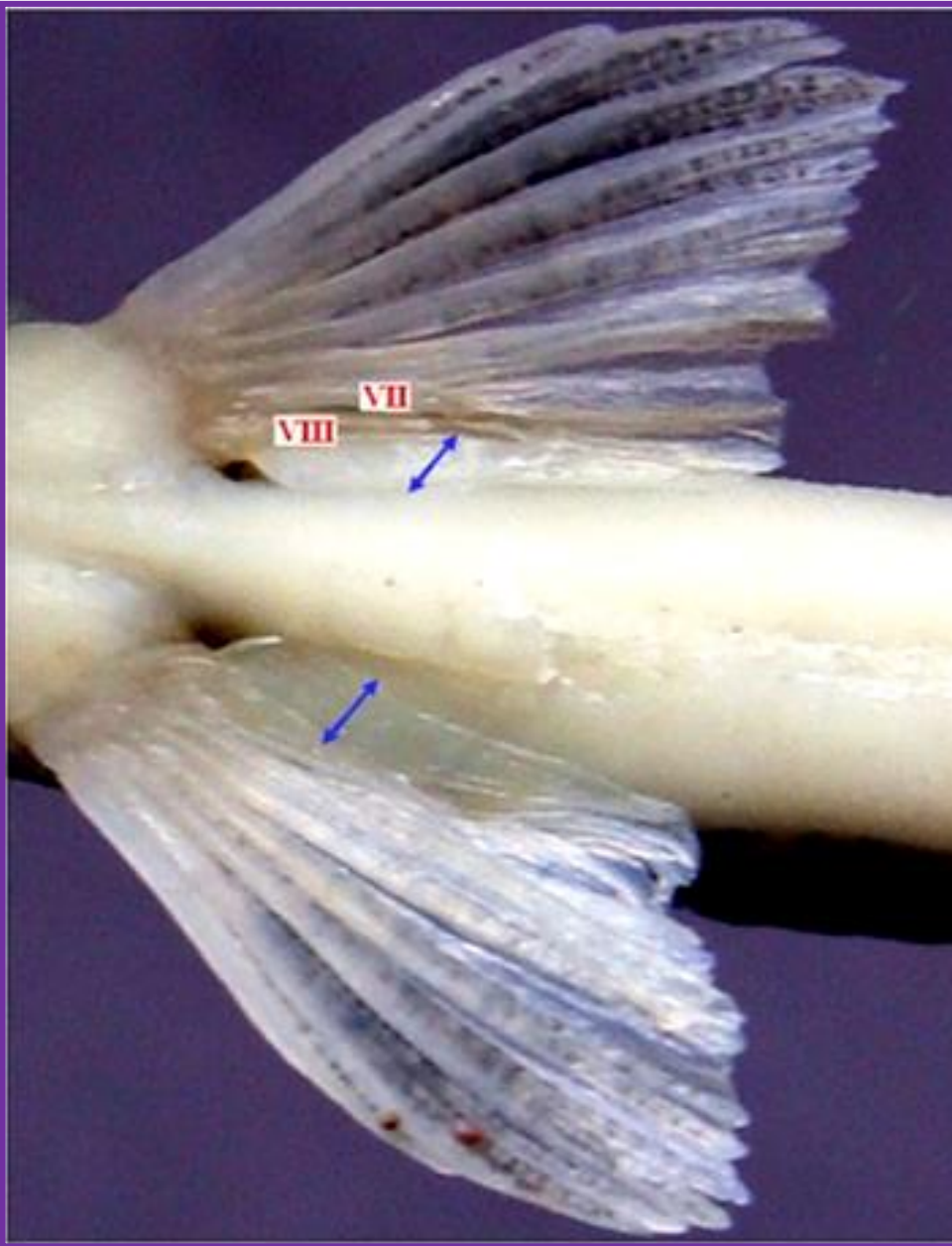
simple, shorter and more swollen (green arrow) than the outer one (blue arrow) which is a bit longer (often bifid) and continuous at the angle of mouth with broad-based mandibular barbels.



*Lepidocephalichthys guntea* (Female): Ventral view of head; showing 3 pairs of barbels (blue arrows); mid-ventrally palmate mental lobes [= deeply divided, posteriorly projecting lobes at lower lip] with 2 digitiform projections; the inner one being simple and shorter (yellow arrow) than the outer one (green arrow) which is a bit longer (often bifid) and continuous at the angle of mouth with broad-based mandibular barbels.



*Lepidocephalichthys guntea*: Lateral view of head enlarged; showing a backwardly directed bifid suborbital spine (yellow arrow); the outer prong being straighter, whereas, the inner one curved and only slightly longer than the outer one.

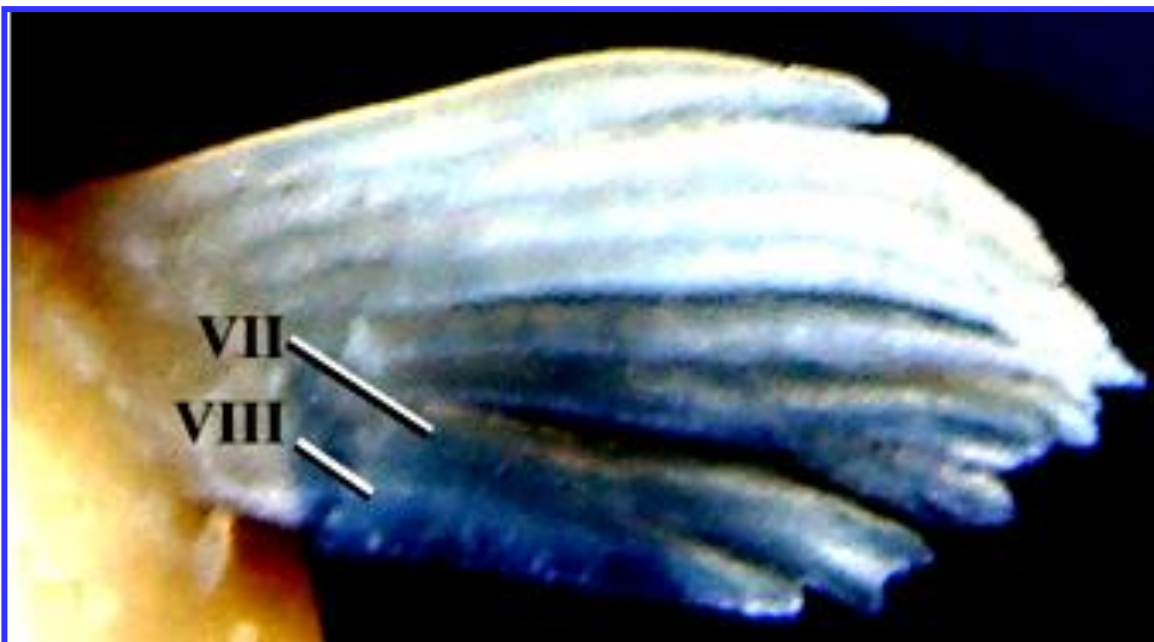


*Lepidocephalichthys guntea* (Male): Ventral view, Pectoral Fin region; showing fused 7th and 8th inner pectoral fin rays and a wedge - shaped extension (blue arrows) from base to the tip.





*Lepidocephalichthys guntea* (Male): Ventral inner view, Pectoral Fin region; showing the presence of a vertical osseous crest (=lamina circularis) [yellow arrow] on the fused 7th and 8th inner pectoral fin rays (green arrow), with maximum elevation almost in the middle.



*Lepidocephalichthys guntea* (Female): Ventral view, Pectoral Fin region, showing fused 7th and 8th inner pectoral fin rays (without a wedge - shaped extension).

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