

A Review of the Gudgeon Genus *Hypseleotris* (Pisces: Eleotridae) of Western Australia, with Descriptions of Three New Species

Douglass F. Hoese* and Gerald R. Allen†

Abstract

The five Western Australian members of the eleotrid genus *Hypseleotris* Gill are reviewed. These small fishes are inhabitants of brackish water, freshwater streams, swamps and ponds, primarily in northern Australia and New Guinea. The species treated in the present paper include *H. aurea* (Shipway) and *H. compressa* (Krefft). In addition, the following three species from the Kimberley district are described as new: *H. ejuncida*, *H. kimberleyensis*, and *H. regalis*. The first two species are closely allied, differing from each other primarily on the basis of coloration, body depth, and number of vertebrae. *Hypseleotris regalis* is most similar to *H. aurea*, but differs with regard to squamation and number of vertebrae. A key to Western Australian *Hypseleotris* and diagnostic illustrations are provided.

Introduction

Prior to 1970 relatively few comprehensive studies had been carried out on the taxonomy of Australian freshwater fishes. Some areas, such as the north-west, had not been sampled extensively primarily because of the inaccessibility of much of this region. Recent collections from the Kimberley district of far northern Western Australia by the Western Australian Museum has resulted in the discovery of a number of undescribed fishes, including a new genus and six new species of eleotrids.

Three of the new species belong to the genus *Hypseleotris*, which occurs in fresh and brackish waters of the Indo-west Pacific. They are small free-swimming fishes which feed mainly on tiny invertebrates. Breeding males are often colourful and make attractive aquarium fishes. Currently few species are recognized, but virtually no work has been done on species occurring outside Australia. Although not recorded from the New World, it is very likely that *Hemieleotris* from Central America will prove identical to *Hypseleotris*. Similarly, *Batanga* from Africa appears close to *Hypseleotris*.

* Department of Ichthyology, The Australian Museum, 6-8 College Street, Sydney, New South Wales 2000.

† Department of Ichthyology, Western Australian Museum, Francis Street, Perth, Western Australia 6000.

Although several species have been described from Australia, generally only four were previously recognized as valid: *H. compressa* (Krefft), *H. galii* (Ogilby), *H. klunzingeri* (Ogilby), and *H. simplex* (Castelnau). Recently Hoese, Larson and Llewellyn (1980) recorded two additional undescribed species from south-eastern Australia. Although we are unable to locate the type specimen of *H. simplex*, it is regarded here as a junior synonym of *H. compressa*, which is widely distributed in northern and eastern Australia. The remaining *Hypseleotris* treated herein, including *H. aurea* and three new species are apparently restricted to north-western Western Australia. Our numerous collections from streams in the Northern Territory and the Gulf of Carpentaria drainage of northern Queensland contain only *H. compressa*. Other *Hypseleotris* species are known in Australia from coastal drainages extending from the Atherton Tablelands of northern Queensland to New South Wales and Victoria, and from inland drainages, including the Murray-Darling system, of southern Queensland, New South Wales, Victoria and South Australia.

Methods

Methods for counts and measurements mainly follow those of Hubbs and Lagler (1958). The longitudinal scale count was taken from the upper pectoral base obliquely to the midline and then to the end of the hypural. The transverse scale count was taken from the origin of the second dorsal fin downward and backward to the anal base (TRDB). The postdorsal scale count is taken from the end of the second dorsal fin to the caudal base middorsally, and includes only scales on the middle of the top of the caudal peduncle. Gill raker counts include all rudiments. Counts for vertebrae, fin rays, scales and gill rakers are presented in Tables 1-6. In addition, the body depth and pelvic fin length of the five species are compared in Tables 7 and 8 respectively.

Specimens studied, including types of the new taxa, are deposited at the following institutions: Australian Museum, Sydney (AM); British Museum (Natural History), London (BMNH); Museum National d'Histoire Naturelle, Paris (MNHN); and Western Australian Museum, Perth (WAM).

Systematics *Hypseleotris* Gill

Hypseleotris Gill, 1863: 270 (*Eleotris cyprinoides* Valenciennes, by original designation).
Carassiops Ogilby, 1897: 732 (*Eleotris compressus* Krefft, by original designation).
Austrogobio Ogilby, 1898: 784 (*Carassiops galii* Ogilby, by original designation).
Caulichthys Ogilby, 1898: 784 (*Asterropteryx guentheri* Bleeker, by original designation).
Shipwayia Whitley, 1954a: 155 (*Eleotris aurea* Shipway, by monotypy and subsequent designation by Whitley, 1954b: 30).

Description

Head and body distinctly compressed. Mouth small, very oblique, posterior margin under or anterior to middle of eye. Gill opening moderately broad, extending forward to below posterior end of preoperculum. Pectoral base narrow, with rays developed ventrally; a free fold of skin extending to upper attachment of opercular membrane above uppermost ray. Body scales large and ctenoid. Teeth small in several rows in both jaws. Tongue tip truncate. First dorsal VI-VIII (rarely V or IX). Second dorsal I,8-12 (rarely 13). Anal I,10-13 (rarely 14). Pectoral rays 14-17 (rarely 13). Longitudinal scale count 24-43. Transverse scale count (TRDB) 7-15. Segmented caudal rays 15. Vertebrae 25-33. Head pores present or absent, sometimes with up to 5 preopercular pores and sometimes two pores above each eye. Cheek sensory papillae normally in longitudinal rows, with few vertical rows (except in *H. klunzingeri*). Body scales ctenoid, often cycloid on belly and nape. Head scales present or absent.

Remarks

Until recently Australian species of *Hypseleotris* were placed in the genus *Carassius* Ogilby. Examination of type material of the type species of *Hypseleotris* (*H. cyprinoides* at MNHN) and *Carassius* (*H. compressa* at BMNH and AM) revealed that these two forms represent a closely related, apparently allopatric, species pair. *H. compressa* differs from *H. cyprinoides* primarily in lacking interorbital scales before the middle of the eye. *H. compressa* is known from Australia and possibly New Guinea while *H. cyprinoides* is found in fresh and brackish water throughout the western tropical Pacific outside Australia.

Whitley (1954a) separated *Shipwayia* from *Carassius* (=*Hypseleotris*) only on the basis of the higher scale counts in *Shipwayia*; 45 to 50 rows versus 27 to 35. Our counts indicate scale counts of 33 to 43 for *H. aurea* compared with 24 to 34 in other Australian species. Because *H. aurea* is closely related to *H. regalis*, sp. nov., an otherwise typical member of the genus which has low scale counts, there appears to be no justification for separating *Shipwayia* and *Hypseleotris*.

The Western Australian species can be conveniently grouped into three categories on the basis of colour similarities. The first contains only *H. compressa*; the second *H. aurea* and the allopatric *H. regalis*, sp. nov.; and the third *H. kimberleyensis*, sp. nov. and the allopatric *H. ejuncida*, sp. nov. On the basis of fin coloration, it appears likely that the two complexes which are restricted to Western Australia were derived from the same stock as *H. compressa*. They do not show any close similarity to species from south-eastern Australia. *H. compressa* is the only known Australian species to occur in salt as well as fresh water, and is the only species ranging throughout tropical and subtropical Australia.

All species from Western Australia are basically similar in sensory papillae patterns (Figure 1), a feature which is often diagnostic in eleotrids.

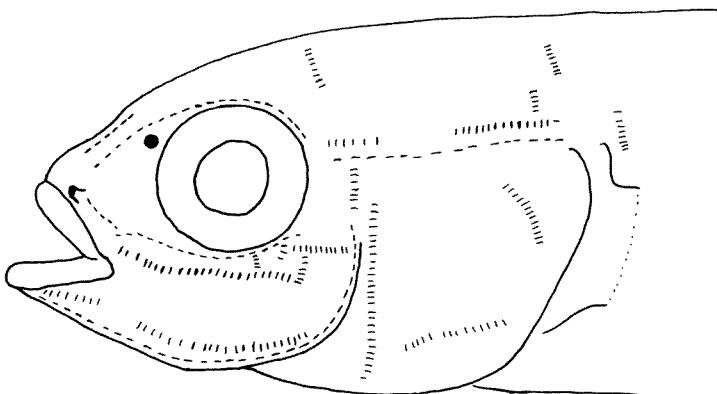


Figure 1 Diagrammatic sketch of sensory papillae on head of *Hypseleotris regalis*. The drawing is a composite, based on several specimens. Papillae numbers are approximate and the pattern shown may be incomplete as the papillae are often difficult to detect.

Key to Western Australian Species of *Hypseleotris*

- 1a Preoperculum with 2-4 pores. Predorsal scales reach forward to above middle of eyes. Scales from under first dorsal fin to upper attachment of opercular membrane ctenoid; nape scales often ctenoid. Second dorsal fin-rays modally I,9 (Murchison River northward to Kimberleys) *H. compressa* (Krefft)
- 1b No preopercular pores. Predorsal scales reach forward to or behind middle of eye. Scales from under first dorsal fin to upper attachment of opercular membrane cycloid; nape scales if present cycloid. Second dorsal fin-rays usually I,10 2
- 2a Longitudinal scale count 34-43. Postdorsal scale count 10-13. Body relatively deep, body depth at pelvic fin origin 20-23% of SL (Murchison River) *H. aurea* (Shipway)
- 2b Longitudinal scale count 24-32. Postdorsal scale count 7-9. Body more slender, depth at pelvic fin origin 14-20% of SL 3
- 3a Longitudinal scale count 24-26. Body moderately slender, body depth at pelvic fin origin 16-20% of SL. Predorsal scaled completely to behind eyes. Gill rakers on outer face of second arch modally 10. Body without vertical bars, but with 15-20

- chevron marks on side. Pelvic fin origin under posterior opercular margin (West Kimberley) *H. regalis* sp. nov.
- 3b Longitudinal scale count 28-32. Body very slender, depth at pelvic fin origin 14-18% of SL. Predorsal naked or partly scaled, with naked patches. Gill rakers on outer face of second arch 8-9. Body with faint vertical bars anteriorly. Pelvic fin origin under or behind pectoral fin insertion 4
- 4a Predorsal completely naked. Operculum naked. Second dorsal and caudal fins clear to dusky without distinct spots or wavy bands; caudal sometimes with 2 faint vertical bands. Dark bar on pectoral fin base developed dorsally only, usually only above uppermost pectoral fin ray. Body depth at anal origin 13-17% of SL. Vertebrae 25 (Central Kimberley) *H. kimberleyensis* sp. nov.
- 4b Predorsal usually extensively scaled, midline sometimes with few scales. Operculum with large scales. Second dorsal fin with numerous white spots, surrounded by dark pigment forming wavy bands. Caudal fin with dark spots, forming 4-6 wavy bands. Bar at base of pectoral fin covering whole base. Body depth at anal fin origin 17-18% of SL. Vertebrae 26 (West Kimberley) *H. ejuncida* sp. nov.

Hypseleotris compressa

Figure 2

Eleotris compressus Krefft, 1864: 184 (Clarence River and Port Denison).
Hypseleotris simplex – Allen, 1975: 95, fig. 12 (in part, WAM P25036-003).

Material Examined

AM I.22746-001, 7 (27-35 mm SL), Lawley River, Western Australia; WAM P.16562-16563, 2 (58 mm SL), Murchison River, Western Australia WAM P25-36-003, 35 (13-37 mm SL), Prince Regent River, Western Australia.

Diagnosis

A species of *Hypseleotris* closely related to *H. cyprinoides* of the western tropical Pacific (exclusive of Australia), but differing from it by lacking interorbital scales anterior to the middle of the eyes. It differs from other Western Australian members of the genus by a combination of characters which include the presence of preopercular pores; predorsal scales extending anteriorly to

above middle of eyes; presence of ctenoid scales between first dorsal fin base and upper attachment of opercular membrane; and a modal count for the second dorsal fin of I,9.

Description

Two to five preopercular pores. Adults usually with two pores connected by short tube above dorsoposterior margin of eye. Predorsal scales reach forward to above middle of eye; cycloid or ctenoid. Cheek with four to six rows of small embedded cycloid scales. Operculum with medium-sized cycloid scales. Gill opening extends forward to below posterior preopercular margin. First dorsal VI. Second dorsal I,9-10. Anal usually I,10-11. Typically with 1 or 2 more anal than dorsal rays. Pectoral usually 14-15. Longitudinal scale count 25-29. Predorsal scales 14-18. Transverse scales (TRDB) 9-10. Postdorsal scales 8-9. Gill rakers on outer face of first arch 3-4+1+19-11 + 12-16. Vertebrae 26. Sides of body often with about 7 or 8 brown vertical bars, often forming X-shaped marks on midside. Base of caudal fin with a vertically elongate dark brown spot just below midside. Dorsal fins with 2 black stripes. Second dorsal with round white spots posteriorly, surrounded by black. Live and fresh adult specimens viewed from above usually have a distinct dark mark near the posterior end of the second dorsal fin.



Figure 2 *Hypseleotris compressa*, female, 29 mm SL, Prince Regent River, Western Australia.

Sexual Dimorphism

Males typically have more elongate posterior second dorsal and anal rays, a higher first dorsal fin, and the two dorsal fins are closer together. Males reach a larger size than do females, and often develop a fleshy hump on the top of the end of the head. Breeding males are often more brightly coloured than females.

Distribution and Habitat

Hypseleotris compressa is common in lower reaches of rivers from eastern Victoria, New South Wales, Queensland, Northern Territory, and Western Australia. The Western Australian distribution extends from the Murchison River

(approximately 27°40'S) northwards in coastal streams and across the Kimberley region to the Northern Territory border. The species is most abundant in flowing waters and is often associated with aquatic vegetation. Juveniles are frequently found in swift-flowing water or in estuaries. The species sometimes occurs in full strength sea water, and this tolerance undoubtedly contributes to its wide distribution.

Hypseleotris aurea

Figure 3

Eleotris aurea Shipway, 1950: 75 (Murchison River).

Shipwayia aurea — Whitley, 1954a: 152 and 155 (description of new genus).

Material Examined

AM I.22743-001, 6 (43-48 mmSL), Murchison River, Western Australia; WAM P.3273 (holotype), 1 (49 mm SL), Murchison River, Western Australia; WAM P22122-004, 14 (33-40 mm SL), Murchison River, Western Australia.

Diagnosis

A species of *Hypseleotris* closely related to *H. regalis* of the Prince Regent Reserve, West Kimberley. It differs from this species by possessing an additional vertebra (26 versus 25) and smaller scales. Ranges of counts for longitudinal scales, transverse scales, predorsal scales, and postdorsal scales are 34-43 v. 24-26, 10-13 v. 8-9, 16-21 v. 14-16, and 10-13 v. 8 for *H. aurea* and *H. regalis* respectively. It differs from *H. compressa* on the basis of characters indicated in the diagnosis section for that species and from other Western Australian *Hypseleotris* on the basis of a combination of characters which include its relatively high longitudinal and postdorsal scale counts and deeper body, the depth at pelvic fin origin 14-20% of SL.

Description

No head pores. Predorsal scales reach forward to above middle of eye. Cheek with four rows of small embedded cycloid scales. Operculum covered with medium-sized cycloid scales. Gill opening extends forward to below posterior preopercular margin. First dorsal VI. Second dorsal usually I,10. Anal usually I,11 with 1 more anal ray than dorsal ray. Pectoral 14-16, usually 15-16. Longitudinal scale count 34-43. Transverse scale count (TRDB) 10-13. Predorsal scales 16-21. Postdorsal scales 10-13. Gill rakers on outer face of first arch 2-3+1+8-9 = 11-13. Vertebrae usually 26. Pelvic fin short, reaching half to two-thirds of distance to anus, 13-17% of SL. Body relatively deep, body depth at anal origin and at pelvic origin 20-23% of SL. Snout and head above eye dark brown in adult males. A black bar at pectoral base, entirely above pectoral rays. Body with 6-9 vertical brown bands, width about equal to eye diameter; bands more pronounced

anteriorly and dorsally, often fading on caudal peduncle. A small dusky spot at base of caudal rays below midside. Second dorsal with 2 or 3 rows of small dark spots on basal half of fin, surrounding white to clear spots. Distal tip of fin dusky, sometimes whole fin dusky. Extreme tip of anal usually white.

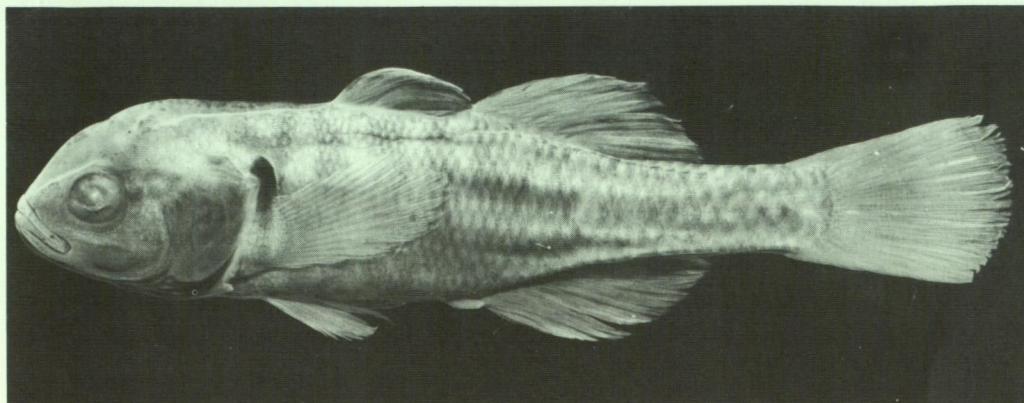


Figure 3 *Hypseleotris aurea*, male, 36 mm SL, Murchison River, Western Australia.

Sexual Dimorphism

Adult males have a prominent forehead hump extending from above the upper end of the opercular margin forward to the snout. The posterior dorsal and anal rays are not prolonged in males, nor were any other sexual differences observed.

Distribution and Habitat

Hypseleotris aurea is known only from the Murchison River, which flows into the Indian Ocean approximately 500 km north of Perth, Western Australia. It has been collected from small, quiet pools near the North-West Highway crossing at Galena (approximately 27°49'S, 114°41'E). The habitat was characterized by moderately turbid water and a boulder substratum littered with dead tree branches.

Hypseleotris regalis sp. nov.

Figure 4

Hypseleotris simplex — Allen, 1975: 95 (in part, Prince Regent Reserve).

Holotype

WAM P25028-009, male, 32 mm SL, Wyulda Creek, about 2 km above junction with Roe River (approximately 15°26'S, 125°37'E), Prince Regent Reserve, West Kimberley, Western Australia, G. Allen, 17 August 1974.

Paratypes

AM I.22744-001, 5 (26-34 mm SL), collected with holotype; WAM P25028-007, 12 (23-36 mm SL), collected with holotype; WAM P25040-004, 14 (22-37 mm SL), Youwanjela Creek (approximately 15°34'S, 125°25'E), a small tributary of the Prince Regent River, West Kimberley, Western Australia, B. Wilson, 21 August 1974.

Diagnosis

A species of *Hypseleotris* closely related to *H. aurea* from the Murchison River of Western Australia. The characters which differentiate these species are discussed in the diagnosis for *H. aurea*. It differs from *H. compressa* by the absence of preopercular pores and other features mentioned in the diagnosis for that species. Finally, it is separable from *H. kimberleyensis* and *H. ejuncida* on the basis of a combination of characters which includes a longitudinal scale count of 24-26; a moderately slender body, the depth at pelvic origin 16-20% of SL; predorsal scales extending to behind eyes; modal gill rakers on outer face of second arch 10; colour pattern consisting of about 15-20 chevron marks on side; and pelvic fin origin positioned under posterior opercular margin.

Description

No head pores. Predorsal scaled forward to above middle of eye. Cheek with 2 or 3 rows of small embedded cycloid scales. Operculum covered with medium-sized cycloid scales. Lower attachment of gill opening below posterior preopercular margin. First dorsal VI. Second dorsal usually I,9-10. Anal usually I,10. Typically an equal number of dorsal and anal rays. Pectoral usually 13-14. Segmented caudal rays 15; branched caudal rays 11, rarely 13. Longitudinal scale count 24-26. Transverse scale count (TRDB) 8-9. Predorsal scales 14-16. Postdorsal scales usually 8. Gill rakers on outer face of first arch $3+4+1+9+10 = 27$, usually 12-14. Vertebrae 25. Pelvic fin moderately long, 18-22% of SL. Body slender, body depth at anal origin and depth at pelvic origin 16-20% of SL. Snout short, less than eye diameter. Mouth small, forming an angle of about 45° with body axis; jaws ending under posterior nostril. First dorsal origin about an eye diameter behind pelvic origin. Pelvic origin below posterior opercular margin. First dorsal fin low, with a rounded margin, height less than body depth; fourth and fifth spines longest. Second dorsal fin subequal in height to first dorsal fin, with posterior rays longest, particularly in males. Caudal short with a rounded to truncate margin. Pectoral rays, except upper 2 or 3 and lower 1 or 2, branched once. Anal rays sometimes with a second branch near tip. Pelvic fins long and pointed, reaching to anus. Caudal peduncle long, length greater than second dorsal fin base. Head dark brown, usually darker than body in males. A black bar at base of pectoral fin extending ventrally to opposite third to seventh pectoral ray. Body with 15-20 thin black chevron marks along midside. A black spot on posterior end of caudal peduncle below midside. Basal one-third of dorsal and anal fins dark brown to black (sometimes with white spots on second dorsal fin).

followed distally by a thin white stripe, followed distally by a broader black stripe; extreme distal tips white.

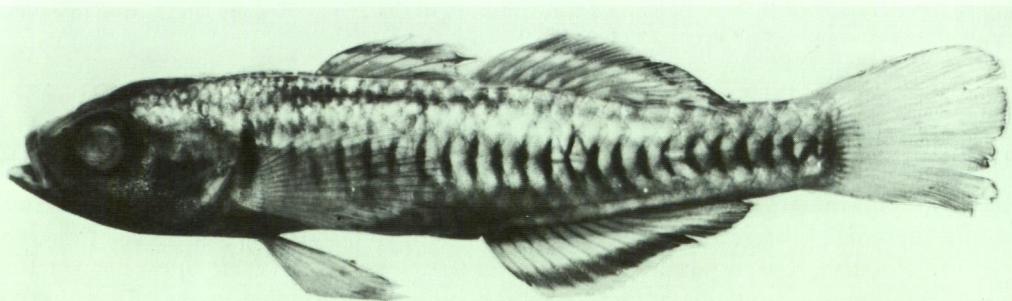


Figure 4 *Hypseleotris regalis*, male holotype, 32 mm SL, Wyulda Creek, Western Australia.

Sexual Dimorphism

Males appear to reach a larger size, although only six females were examined (23-30 mm SL) and 21 males (27-36 mm SL). In males the first dorsal membrane reaches almost to the base of the second dorsal fin, but the two fins are widely separate in females. Males have the posterior dorsal and anal rays prolonged, with the last ray longer than the third ray. In females the last ray is about two-thirds length of the third ray. The caudal fin margin is rounded in males and truncate in females. The latter sex is generally lighter in colour.

Distribution and Habitat

Hypseleotris regalis is known only from the Upper Roe River and Youwangela Creek, in a remote section of the Prince Regent Reserve. The two populations are identical with regard to coloration, although there are slight differences in fin-ray, scale, and gill raker counts. The holotype and majority of paratypes were collected with rotenone over rock boulder substratum in a quiet, clear pool approximately 4 x 10 m with a maximum depth of about 2 m.

Etymology

The species is named *regalis* (Latin for 'regal' or 'royal') with reference to the name of the type locality area, Prince Regent Reserve.

Hypseleotris kimberleyensis sp. nov.

Figure 5

Holotype

WAM P25454-009, male, 34 mm SL, Barnett River near Barnett Gorge (approximately 16°32'S, 126°08'E), Central Kimberley, Western Australia, B. Hutchins and A. Chapman, 30 July 1975.

Paratypes

AM I.22742-001, 3 (31-35 mm SL), collected with holotype; WAM P25454-007, 6 (27-34 mm SL), collected with holotype; WAM P25872-006, 4 (28-34 mm SL), Manning Creek Gorge (approximately 16°38'S, 125°55'E), Central Kimberley, Western Australia, G. Allen and G. Evans, 15 September 1977.

Diagnosis

A species of *Hypseleotris* closely related to *H. ejuncida* from the Prince Regent River of Western Australia. These species differ from other Western Australian members of the genus by a combination of characters which includes the absence of preopercular pores, longitudinal scale count 28-32; body relatively slender, the depth at pelvic fin origin 14-18% of SL, and the pelvic fin origin under or behind the pectoral fin insertion. *Hypseleotris kimberleyensis* differs from *H. ejuncida* on the basis of the following combination of characters: predorsal and operculum without scales; second dorsal and caudal fins without distinct spotting or wavy bands; dark bar on pectoral fin base developed only on dorsal portion, usually above uppermost pectoral ray; body depth at anal fin origin 13-17% of SL; and vertebrae 26.

Description

No head pores, Head entirely naked. No median nape scales before first dorsal fin. Body scaled, a naked patch under first dorsal fin from upper pectoral base to second dorsal origin. Ventral surface of belly naked. Gill opening extends forward to below a point just in front of posterior preopercular margin. Pelvic origin behind pectoral insertion. First dorsal VI. Second dorsal usually I,10. Anal usually I,10. Pectoral rays 14-15. Segmented caudal rays 15; branched caudal rays 11, rarely 12. Longitudinal scale count 29-32. Transverse scale count (TRDB) usually 9. Postdorsal scales 7-9. Gill rakers on outer face of first gill arch 1-3+1+7-9 = 9-12. Vertebrae 26. Pelvic length 18-22% of SL. Body depth at anal origin 14-17% of SL. Body depth at pelvic origin 13-17% of SL. Snout short, subequal to eye. Mouth small, forming an angle of about 50° with body axis; jaws ending under posterior nostril. First dorsal origin about an eye diameter behind pelvic origin. First dorsal fin low, with rounded margin, height less than body depth; fourth and fifth spines longest. Second dorsal fin subequal in height to first dorsal fin; posterior rays sometimes prolonged ranging from two-thirds or equal to length of third ray. Caudal fin with slightly rounded to truncate margin. Pectoral rays seven to 11 branched, with one branch point each; middle rays longest. Second dorsal and anal rays branched once, except for first segmented ray, which is unbranched; other anterior rays sometimes with a second branch point near tip. Pelvic fins long and pointed, reaching about to anus. Caudal peduncle long, length greater than second dorsal base. Head dark brown, darker than tan body. Head of females lighter, often with dark brown on top of head only. A black bar at base of pectoral fin from upper margin to opposite first to fifth pectoral ray. Body with 4-7 narrow dark brown bars anteriorly from first dorsal fin to middle of second

dorsal fin, more distinct anteriorly. Scales edged in dark brown, edgings darkest on midside forming a row of X-shaped marks just below midside. A small dark brown spot on posterior end of caudal peduncle just below midside. Median fins dark brown to black in males, dusky in females. Second dorsal and anal sometimes with a thin whitish longitudinal stripe just below middle of fin; distal margin usually lighter than rest of fin, but without a distinct white margin. No white spots on fins. Pectoral and pelvic fins dusky to clear. Caudal fin sometimes with two thin vertical wavy lines near base.

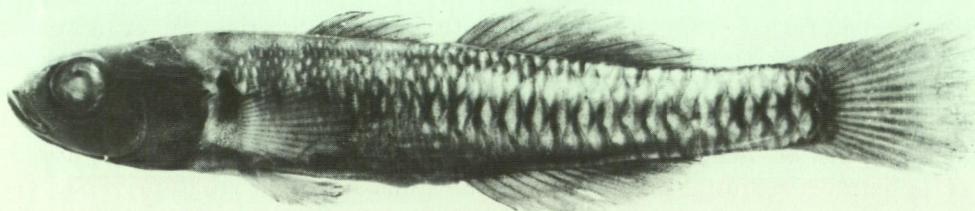


Figure 5 *Hypseleotris kimberleyensis*, male holotype, 34 mm SL, Barnett River, Western Australia.

Sexual Dimorphism

Adults of both sexes lack a prominent hump on the forehead. Of the five females examined the largest is 31 mm SL, and the nine males range from 30 to 30.5 mm SL. Males have the two dorsal fins separated by about 2 or 3 scale rows; in females the separation is slightly wider, about 3 or 4 scale rows. Males collected in spring (September) are characterized by prolonged posterior dorsal and anal rays, but in males collected during winter (July), these rays are not prolonged. The caudal margin is rounded in males and distinctly truncate in females. The anterior 3-4 bands on the side are distinct in males, but in females 6-7 bands are evident. In addition, males are typically darker than females.

Distribution and Habitat

This species is known only from the Barnett River system in the vicinity of Mount Barnett Station ($16^{\circ}40'S$, $125^{\circ}57'E$) which is situated on the Gibb River (Derby to Wyndham) Road, approximately 260 km north-east of Derby, Western Australia. The type specimens were collected from clear, rocky pools with moderate flow.

Etymology

The species is named *kimberleyensis* with reference to the type locality, the Kimberley district of Western Australia.

Hypseleotris ejuncida sp. nov.

Figure 6

Holotype

WAM P25032-009, male, 46 mm SL, Gundarara Creek, about 2 km above junction with Prince Regent River (approximately 15°49'S, 125°37'E), Prince Regent Reserve, West Kimberley, Western Australia, G. Allen, 21 August 1974.

Paratypes (all collected with holotype)

AM I,22745-001, 4 (34-37 mm SL); WAM P25032-002, 8 (23-43 mm SL).

Diagnosis

A species of *Hypseleotris* closely related to *H. kimberleyensis*. The reader is referred to the diagnosis for the latter species for a discussion of the differences between these two species and other Western Australian members of the genus. *Hypseleotris ejuncida* differs from *H. kimberleyensis* on the basis of the following combination of characters: predorsal and operculum usually extensively scaled; second dorsal fin with white spots and wavy bands; caudal fin with dark spots forming 4-6 wavy bands; dark bar covering entire pectoral fin base; body depth at anal fin origin 17-18% of SL; and vertebrae 25.

Description

No head pores. Top of head scaled forward to just behind eyes, midline of nape often scaled at least partially. Operculum with large cycloid scales. Cheek naked. Belly covered with cycloid scales. Body scales largely ctenoid, cycloid in patch under first dorsal fin and on head. Gill opening extends forward to below posterior preopercular margin. Pelvic origin just below or behind dorsal pectoral insertion. First dorsal VI. Second dorsal I,9-10. Anal I,9-11, usually I,10. Pectoral rays 14-15. Segmented caudal rays 15; branched caudal rays 11-13, usually 11. Longitudinal scale count 28-31. Transverse scale count (TRDB) usually 8 or 9. Predorsal midline scales 2-20, scales at side of midline 14-20. Postdorsal scales usually 8. Gill rakers on outer face of first gill arch 2-3+1+8-9 = 11-13. Vertebrae 25. Pelvic length 17-22% of SL, usually 19-21%. Body depth at anal origin 17-18% of SL. Body depth at pelvic origin 16-18% of SL. Snout short, about equal to eye diameter. Mouth small, forming an angle of about 45° with body axis, jaws end under a point just in front of posterior nostril. First dorsal fin origin about an eye diameter behind pelvic origin. First dorsal fin low, height less than body depth; fourth and fifth spines longest. Second dorsal slightly higher than first; posterior rays prolonged in males, longer than third ray; short in females, about two-thirds length of third ray. Caudal fin with rounded to almost truncate margin. Pectoral fin with 8-13 branched rays, usually 11-13; middle rays often with 2 or 3 branch points. Second dorsal and anal rays (except for first segmented ray) with one branch point each in small specimens; often with a second branch point near tip in larger specimens. Pelvic fins long and with pointed tip reaching almost to anus. Caudal peduncle long, length greater than second dorsal fin base. Head dark

brown in males, lighter in females, darker than tan body. Dark brown bar at base of pectoral fin darker dorsally, covering whole pectoral base. Body with 3 or 4 dark brown vertical bars between pectoral base and second dorsal fin origin. Body scales edged with dark brown, forming a diamond-shaped pattern on body. A longitudinal irregular dark brown stripe along side just below midside, formed from intense dark edges to scales; stripe often obscure in large dark males. A prominent dark brown spot at end of caudal peduncle, extending ventrally from midside. Dorsal and anal fins dusky to black. First dorsal fin with a pale whitish median longitudinal stripe. Base of second dorsal fin with 1 or 2 rows of white spots, prominent in males, sometimes obscure in females; membranes between rays with dark pigment forming almost vertical thin stripes, which cross fin rays. Second dorsal and anal fins with a pale whitish margin. Caudal fin with 4 to 6 thin dark brown wavy vertical lines, more prominent in females. Pectoral and pelvic fins clear to dusky.

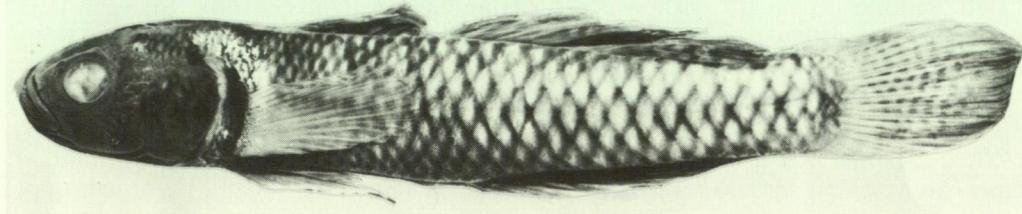


Figure 6 *Hypseleotris ejuncida*, male holotype, 46 mm SL, Gundarara Creek, Western Australia.

Sexual Dimorphism

Adults of both sexes lack a hump on the forehead. The six females examined ranged in size from 23-36 mm SL and the seven males 30-47 mm SL. The posterior membrane of the first dorsal fin of males reaches almost to the second dorsal fin origin, but in females the membrane is separated from the second dorsal fin by two scale rows. In addition, the posterior dorsal and anal rays are prolonged and the caudal fin is more rounded in males. Females are generally lighter coloured, with the anterior body bands more distinct than in males.

Distribution and Habitat

This species is known only from the Prince Regent River drainage, situated approximately 260 km north of Derby, Western Australia. The type specimens were collected with rotenone from a clear, quiet pool over sandstone bottom at depths to about 2 m.

Etymology

The species is named *ejuncida* (Latin for 'slender') with reference to the slender body shape.

Table 1 Vertebral counts of species of *Hypseleotris* from Western Australia. An asterisk indicates count of holotype.

Species	Population	Vertebral formula							Total vertebrae			
		13+12	13+13	13+14	14+10	14+11	14+12	15+10	24	25	26	27
<i>H. compressa</i>	Murchison R.	—	—	—	—	2	—	—	—	2	—	—
	Lawley R.	—	—	—	—	6	—	1	—	7	—	—
	Prince Regent R.	15	—	—	1	15	3	—	1	30	3	—
<i>H. aurea</i>	Murchison R.	—	12	2	—	—	—	—	—	—	12	2
<i>H. regalis</i>	Youwanjela Ck	14	—	—	—	—	—	—	—	14	—	—
	Upper Roe R.	16*	—	—	—	—	—	—	—	16*	—	—
<i>H. kimberleyensis</i>	Barnett R.	—	10*	—	—	—	—	—	—	—	10*	—
	Manning Ck	—	4	—	—	—	—	—	—	—	4	—
<i>H. ejuncida</i>	Prince Regent R.	7	—	—	—	6	—	—	—	13*	—	—

257

Table 2 Dorsal, anal and pectoral ray counts of species of *Hypseleotris* from Western Australia. Spine in fins included in count. An asterisk indicates count of holotype.

Species	Population	Second dorsal rays				Anal rays				Dorsal-Anal				Pectoral rays				
		9	10	11	12	10	11	12	13	+1	0	-1	-2	13	14	15	16	17
<i>H. compressa</i>	Murchison R.	—	2	—	—	—	1	1	—	—	—	1	1	—	—	—	—	—
	Lawley R.	—	5	2	—	—	4	3	—	—	—	6	1	—	2	3	2	—
	Prince Regent R.	—	17	5	—	1	11	10	—	1	1	14	6	—	4	16	1	1
<i>H. aurea</i>	Murchison R.	—	1	8*	—	—	1	7	1*	—	—	8	1*	—	1*	6*	3	—
<i>H. regalis</i>	Youwanjela Ck	1	2	3	—	2	4	—	—	—	4	2	—	4	2	—	—	—
	Upper Roe R.	—	2	15*	—	2	10*	3	—	1	11*	5	—	3	10*	2	—	—
<i>H. kimberleyensis</i>	Barnett R.	—	—	9*	1	—	6	4*	—	—	7	3*	—	—	8*	1	—	—
	Manning Ck	—	1	3	—	1	3	—	—	1	2	1	—	—	—	4	—	—
<i>H. ejuncida</i>	Prince Regent R.	—	3	10*	—	1	10	2*	—	1	7	5*	—	—	6	6*	—	—

Table 3 Longitudinal scale count in *Hypseleotris* from Western Australia. An asterisk indicates count of holotype.

Species	Population	Scale Count																			
		24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
<i>H. compressa</i>	Murchison R.																				
	Lawley R.																				
	Prince Regent R.								1	3	6	4	1								
<i>H. aurea</i>	Murchison R.																1		1	3	2*
<i>H. regalis</i>	Youwanjela Ck																				
	Upper Roe R.								5	5	6*										
<i>H. kimberleyensis</i>	Barnett R.											6	1	2	1*						
	Manning Ck											2		1	1						
<i>H. ejuncida</i>	Prince Regent R.											1	3	4*	3						

258

Table 4 Predorsal scale counts in species of *Hypseleotris* from Western Australia. Counts are along midline, except where noted. An asterisk indicates count of holotype.

Species	Population	Scale Count																					
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
<i>H. compressa</i>	Murchison R.	.																	1	1			
	Lawley R.																	3	3				
	Prince Regent R.																3	5	7	1			
<i>H. aurea</i>	Murchison R.																	1*	1	1	3	2	1
<i>H. regalis</i>	Youwanjela Ck																3	2	1				
	Upper Roe R.																7	7*	1				
<i>H. kimberleyensis</i>	Barnett R.	10*																					
	Manning Ck		4																				
<i>H. ejuncida</i>	(Midline)			1	1					1		1		2		1	2*		1	1			
	(Sides of nape)															2	2	1	1	2*	1	1	

Table 5 Postdorsal and transverse scale counts in species of *Hypseleotris* from Western Australia. The transverse count is from the second dorsal origin backward and downward to the anal base. An asterisk indicates count of holotype.

Species	Population	Transverse Scale Count						Postdorsal Scale Count					
		8	9	10	11	12	13	7	8	9	10	11	12
<i>H. compressa</i>	Murchison R.			2						1			
	Lawley R.		1	4						3	3		
	Prince Regent R.		7	8						11	16		
<i>H. aurea</i>	Murchison R.			2	4	2	1*					2	1
<i>H. regalis</i>	Youwanjela Ck	1	5							6			
	Upper Roe R.	9	5						2	13*			
<i>H. kimberleyensis</i>	Barnett R.	1	8	1					2	6*	2		
	Manning Ck		1							1			
<i>H. ejuncida</i>		6	4*	1						11*	1		

Table 6 Gill rakers on outer face of lower arch in Western Australian species of *Hypseleotris*. The count of the lower rakers includes the raker at the angle of the arch. An asterisk indicates count of holotype.

Species	Population	Lower Gill Rakers						Total Rakers					
		7	8	9	10	11	12	9	10	11	12	13	14
<i>H. compressa</i>	Murchison R.			1	1						2		
	Lawley R.			1	5	1					1	5	1
	Prince Regent R.			4	7	5				1	3	6	5
<i>H. aurea</i>	Murchison R.		3	3	1				3	4	1		
<i>H. regalis</i>	Youwanjela Ck			4	2					4	1	1	
	Upper Roe R.			11*	6					7*	9	1	
<i>H. kimberleyensis</i>	Barnett R.	2	6*	2					5	3	2*		
	Manning Ck	1	3					3	1				
<i>H. ejuncida</i>	Prince Regent R.			3*	9					2*	7	3	

Table 7 Body depth at anal origin and pelvic origin, expressed as percentages of standard length, of Western Australian species of *Hypseleotris*.

Species	Body Depth at Pelvic Origin										Body Depth at Anal Origin											
	14	15	16	17	18	19	20	21	22	23	24	13	14	15	16	17	18	19	20	21	22	23
<i>H. compressa</i>			1	1	3	3	3	4	1	2						4	2	2	5	3	3	
<i>H. aurea</i>						1	1	3	3								1	2	2	2	3	
<i>H. regalis</i>		2	5	4	7	2									3	3	10	3	1			
<i>H. kimberleyensis</i>	3	3	5	1								2	1	5	2	2						
<i>H. ejuncida</i>			1	4	7											2	10					

Table 8 Pelvic lengths, as percentages of standard length of species of *Hypseleotris* from Western Australia.

Species	Pelvic Length										
	13	14	15	16	17	18	19	20	21	22	23
<i>H. compressa</i>											
Lawley and Murchison R.								2	5	1	1
Prince Regent R.						1		2	1	3	4
<i>H. aurea</i>	1	2	3	1	1						
<i>H. regalis</i>						2		7	4	1	
<i>H. kimberleyensis</i>						2	2			2	
<i>H. ejuncida</i>						1		1	4	4	1

Acknowledgements

Fieldwork which resulted in the collection of the three new species was financed jointly by the Australian Biological Resources Study Interim Council, the Western Australian Department of Fisheries and Wildlife, and the Western Australian Museum. We thank A. Chapman, G. Evans, J.B. Hutchins, and B.R. Wilson for their assistance in collecting type specimens, and C.J. Allen for her careful preparation of the typescript.

References

- Allen, G.R. (1975). A preliminary checklist of the freshwater fishes of the Prince Regent River Reserve, North-west Kimberley, Western Australia. In: Miles, M.M. and A.A. Burbidge. A biological survey of the Prince Regent River Reserve North-west Kimberley, Western Australia in August, 1974. *Wildl. Res. Bull. West. Aust.* (3): 1-116.
- Gill, T. (1863). On the gobioids of the eastern coast of the United States. *Proc. Acad. Nat. Sci. Philad.* 15: 267-269.
- Hoese, D.F., Larson, H.K. and Llewellyn, L. (1980). Eleotridae. In: R.M. McDowall (ed.). *Freshwater Fishes of Southeastern Australia*. (A.H. & A.W. Reed Pty Ltd: Sydney)
- Hubbs, C.L. and Lagler, K.R. (1958). Fishes of the Great Lakes region. *Bull. Cranbrook Inst. Sci.* (26): 251 pp.
- Krefft, G. (1864). Notes on Australian freshwater fishes and descriptions of four new species. *Proc. zool. Soc. London.* 1864: 182-184.
- Ogilby, J.D. (1897). On some Australian Eleotrinae. *Proc. Linn. Soc. N.S.W.* 21 (4): 725-757.
- Ogilby, J.D. (1898). On some Australian Eleotrinae, Part 2. *Proc. Linn. Soc. N.S.W.* 22 (4): 783-793.
- Shipway, B. (1950). Notes on the aquatic natural history of the lower Murchison River. *West. Aust. Nat.* 2 (4): 73-77.
- Whitley, G.P. (1954a). Some freshwater gudgeons mainly from Australia. *Aust. Mus. Mag.* 11 (5): 150-155.
- Whitley, G.P. (1954b). New locality records for some Australian fishes. *Proc. Roy. Soc. N.S.W.* 1952/53: 23-30.