Neotropical Ichthyology, 9(4): 777-793, 2011

Two new trans-Andean species of *Imparfinis* Eigenmann & Norris, 1900 (Siluriformes: Heptapteridae) from Colombia

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Two new species of *Imparfinis* are described from the trans-Andean region of Colombia. *Imparfinis timana* is diagnosed by having longer anal fin base (12.4-15.5% in SL), in combination with long adipose fin (24.6-31.3% in SL), 5-6 gill rakers on the first ceratobranchial, 42-43 vertebrae and additional measurements. *Imparfinis usmai* is distinguished by the combination of first ray of dorsal fin longest, but not projected as a long filament, long adipose fin (21.1-27.0% in SL), maxillary barbel exceeding pelvic-fin base, 39-40 vertebrae, upper caudal-fin lobe pointed and longer than lower lobe, lower lobe rounded, 7-8 gill rakers on the first ceratobranchial, as well as additional measurements. *Imparfinis timana* is only known from río Guarapas, a small tributary of the upper course of the río Magdalena. *Imparfinis usmai* is broadly distributed in the upper basin of ríos Cauca and Magdalena, and in the lower Patía river basin. The restricted distribution of *I. nemacheir* to trans-Andean drainages (Atrato, Magdalena, and Lago de Maracaibo) is also discussed.

Duas novas espécies do gênero *Imparfinis* são descritas da região transandina da Colômbia. *Imparfinis timana* é diagnosticada por possuir as nadadeiras adiposa e anal compridas (24,6-31,3% e 12,4-15,5% no CP, respectivamente), 5-6 rastros branquiais no primeiro ceratobranquial, 42-43 vértebras, além de outros caracteres de morfometria. *Imparfinis usmai* é diferenciada pela combinação do primeiro raio da nadadeira dorsal longo, mas não projetado como um filamento comprido, nadadeira adiposa longa (21,1-27,0% na CP), barbilhões maxilares ultrapassando a base da nadadeira ventral, 39-40 vértebras, lóbulo superior da nadadeira caudal pontiagudo e mais longo que o lóbulo inferior, lóbulo inferior arredondado, 7-8 rastros branquiais no primeiro ceratobranquial e outros caracteres de morfometria. *Imparfinis timana* é conhecida somente para o rio Guarapas, pequeno tributário da bacia do alto rio Magdalena. *Imparfinis usmai* é amplamente distribuída nas bacias dos rios Cauca, Magdalena e Patía. A distribuição restrita de *I. nemacheir* nas bacias da região transandina (Atrato, Magdalena e Lago de Maracaibo) é discutida.

Key words: Andes, *Imparfinis lineatus*, *Imparfinis nemacheir*, *Imparfinis spurrellii*, Neotropical catfishes.

Introduction

The genus *Imparfinis* was described by Eigenmann & Norris (1900), based on the species *I. piperatus* Eigenmann & Norris, 1900 from southeastern Brazil (São Paulo State). As many of the heptapterid genera lacking a free orbital margin (*e.g. Cetopsorhamdia* Eigenmann & Fisher, 1916, *Heptapterus* Bleeker, 1858), *Imparfinis* is a poorly diagnosed genus. Since its description, no exclusive character has been offered for generic recognition. Only a questionable combination of characters, many of them widely present in separate heptapterid genera, has been used in its diagnosis. This has

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resulted in several different interpretations by authors dealing with the taxonomy and systematics of Heptapteridae, and a continuously changing species composition. To date, the only attempt to phylogenetically diagnose *Imparfinis* is that of Bockmann (1998), as part of a comprehensive study of Heptapteridae. Currently the genus includes 19 species (Almirón *et al*., 2007; Bockmann & Guazelli, 2003; Ferraris, 2007), and is one of the most broadly distributed within the family Heptapteridae, from streams in Costa Rica [*Imparfinis lineatus* (Bussing, 1970)] to the Paraná and Uruguay river basins in Argentina (*I. mishky* Almirón, Casciotta, Bechara, Ruíz Díaz, Bruno, D'Ambrosio, Solimano & Soneira, 2007), and to both sides of the Andean cordillera. Most of the species have cis-Andean distributions while three are known to be trans-Andean: *I. lineatus*, *I. nemacheir* (Eigenmann & Fischer, 1916), originally described from the río Magdalena basin, in Colombia, and *I. spurrellii* (Regan, 1913), from the río San Juan basin, also in Colombia.

Recently, explorations conducted in the Cauca and Magdalena drainages in Colombia have resulted in the collection of two species, which fit the most recent diagnoses for *Imparfinis* offered by Mees (1974) and Mees & Cala (1989), and exhibit all the apomorphic conditions provided by Bockmann (1998) in his phylogenetic diagnosis of *Imparfinis*. The two species show consistent morphological differences with all described species of *Imparfinis*, and consequently they are described as new in this paper.

Material and Methods

Measurements were taken with a digital caliper on the left side of specimens whenever possible. Methodology and terminology for measurements follows Lundberg & McDade (1986) and Bockmann (1994), except for body depth which was measured at the pelvic-fin origin and caudal peduncle depth at the posterior end of adipose-fin base. Nomenclature for sensory pores follows Bockmann & Miquelarena (2008). Cleared and stained specimens (CS) were prepared following Taylor & van Dyke (1985). Number of branchiostegal rays, gill rakers on first gill arch, vertebrae, ribs, as well as number and position of supporting elements of dorsal and anal fins were determined from CS specimens. Vertebral counts include those vertebrae associated with the Weberian complex and the compound caudal centrum was counted as one. Diagnosis of the new species here proposed incorporate comparisons with each of all the currently valid species of *Imparfinis* following Ferraris (2007), and consider some species as *I. pristos* Mees & Cala, 1989, and *I. stictonotus* (Fowler, 1940), whose generic allocation has been questioned (Bockmann, 1998; Zuanon *et al*., 2006). *Chasmocranus peruanus* Eigenmann & Pearson, 1942 is considered to belong to *Imparfinis* following Bockmann (1994, 1998). Osteological data of *Imparfinis nemacheir* from CS material were complemented with information gathered from radiographs of the holotype of *Nannorhamdia nemacheir*, available at the All Catfish Species Inventory Image Base website (http://acsi.acnatsci.org/base/index.html). Osteological data of *Imparfinis guttatus* (Pearson, 1924) and *I. peruanus* were obtained from x-ray images of their respective holotypes, available at the Primary Types Image Base of the California Academy of Sciences website (http://research.calacademy.org/redirect?url=http://researcharchive.calacademy.org/research/Ichthyology/Types/index.asp). Morphological data for the following species are based on their respective original descriptions and redescriptions (Lütken, 1875; Mees, 1974; Mees & Cala, 1989): *I. borodini* Mees & Cala, 1989 (Borodin, 1927), *I. guttatus*, *I. hasemani* Steindachner, 1915, *I. hollandi* Haseman, 1911, *I. longicauda* (Boulenger, 1887), *I. minutus* (Lütken, 1874), *I. mirini* Hasemann, 1911, *I. mishky*, *I. peruanus*, *I. pijpersi* Hoedeman, 1961, *I. piperatus*, and *I. schubarti* (Gomes, 1956). Data on counts of gill rakers on first gill arch, total vertebrae, pleural ribs, total anal-fin rays, branched caudal-fin rays and position of first pterygiophore of dorsal and anal fins, for *I. borodini*, *I. guttatus*, *I. hasemani*, *I. hollandi*, *I. longicauda*, *I. minutus*, *I. mirini*, and *I. piperatus* were taken from Bockmann (1998). Abbreviations: HL, head length; PH, parhypural; PU, preural; SL, standard length. Institutional abbreviations follow Leviton *et al*. (1985), with the inclusion of CZUT-IC, Colección Zoológica Universidad del Tolima, Ictiología, Ibagué, Colombia; IAvH-P, Colección de Peces Dulceacuícolas, Instituto Alexander von Humboldt, Villa de Leyva, Colombia; IMCN, Colección Zoológica de Referencia del Museo de Ciencias Naturales Federico Carlos Lehmann Valencia del INCIVA, Cali, Colombia; MHNLS, Museo de Historia Natural La Salle, Caracas, Venezuela; MPUJ, Museo Javeriano de Historia Natural "Lorenzo Uribe S. J.", Bogotá, Colombia. All available specimens of *Imparfinis* from trans-Andean drainages found in the ichthyological collections of CZUT-IC, IAvH-P, ICN-MHN, IMCN, MBUCV, MCNG, MHNLS and MPUJ were examined.

Results

Imparfinis timana, new species
Fig. 1

Holotype. IAvH-P 10696, 74.2 mm SL, Colombia, Departamento del Huila, Municipio Palestina, río Guarapas, in the mouth of quebrada La Quebradona, small tributary of upper río Magdalena basin, 01º45'49"N 76º05'05"W, 1350 m asl, 17 Aug 2005, J. A. Maldonado-Ocampo, J. Bogotá-Gregory, F. Villa-Navarro & A. Ortega-Lara.

Paratypes. Colombia: río Magdalena basin: Departamento del Huila: CZUT-IC 2389, 4, 29.6-46.8 mm SL, collected with the holotype. IAvH-P 7062, 5, 51.0-72.0 mm SL, collected with the holotype. IAvH-P 7061, 9, 54.7-76.6 mm SL (2 CS, 62.7-76.2 mm SL), IMCN 1203, 1 CS, 62.5 mm SL, MBUCV-V-33735, 3, 47.9-68.8 mm SL (1 CS, 47.9 mm SL), Municipio Palestina, quebrada La Quebradona, in the mouth of río Guarapas, 01º45'51"N 76º05'21"W, 1350 m asl, same date and collectors as the holotype. IAvH-P 7067, 36, 42.4-57.2 mm SL (1 CS, 42.4 mm

Fig. 1. *Imparfinis timana*, holotype, IAvH-P 10696, 74.2 mm SL, Colombia, Huila, Palestina, río Guarapas, in the mouth of quebrada La Quebradona, upper río Magdalena basin, 01º45'49"N 76º05'05"W. Scale bar = 1 cm.

SL), IMCN 2003, 2, 51.6-60.7 mm SL, Municipio Pitalito, río Guarapas, Tasajera, 01º51'25"N 76º02'34.2"W, 1320 m asl, same date and collectors as the holotype.

Diagnosis. This species is distinguished from all trans-Andean species of the genus (*I. lineatus*, *I. nemacheir*, *I. spurrellii*, and *I. usmai*) by its longer adipose-fin (24.6-31.3% in SL *vs*. 17.2-18.6% in *I. lineatus*; 19.0-21.8% in *I. nemacheir*; 21.1-22.9% in *I. spurrellii*; 21.1-27.0% in *I. usmai*) and longer anal-fin base (12.4-15.5% in SL *vs*. 10.9-11.7% in *I. lineatus*; 9.6-13.1% in *I. nemacheir*; 11.5-12.0 % in *I. spurrellii*; 10.8-14.5% in *I. usmai*). *Imparfinis timana* can be differentiated from all trans-Andean species, except *I. lineatus*, by having 5-6 gill rakers on the first ceratobranchial (*vs*. 7-8 in *I. nemacheir* and *I. usmai*; 10-11 in *I. spurrellii*); 42-43 vertebrae (*vs*. 38-40 in *I. nemacheir*; 45 in *I. spurrellii*; 39-40 in *I. usmai*) and greater caudal peduncle depth (7.1-8.7% in SL *vs*. 5.3-6.9% in *I. nemacheir*; 7.0-7.2% in *I. spurrellii*; 5.6-7.8% in *I. usmai*). *Imparfinis timana* is distinguished from *I. nemacheir* and *I. spurrellii*, by a greater interorbital width (29.4-38.1 % in HL *vs*. 28.2-30.5% in *I. nemacheir*; 23.6-24.3% in *I. spurrellii*). *Imparfinis timana* is further recognized from *I. lineatus* by its shorter predorsal length (30.7-36.9% in SL *vs*. 36.0-37.9%); by the longer maxillary barbel (exceeding end of pectoral-fin, maxillary barbel length: 32.3-45.0% in SL *vs*. extending to half length of pectoral fin, 24.0-32.6%), and by the upper caudal fin lobe longer than lower lobe (lower caudal fin lobe length/upper caudal fin lobe length: 0.73-0.93 times) *vs*. both lobes approximately symmetrical (0.93-0.96 times). *Imparfinis timana* also differs from *I. nemacheir* by having the first ray of dorsal and pectoral fins shorter than the second ray of the respective fin (*vs*. longer and extended as a filament projected beyond the margin in both fins); shorter maxillary barbels (not surpassing the pelvic-fin base *vs*. surpassing the pelvic-fin base) and shorter caudal-fin lobes (upper caudal-fin lobe length: 21.9-28.0% in SL *vs*. 38.2-52.1%; lower caudal-fin lobe length: 18.4-23.8% in SL *vs*. 28.6-32.3%). *Imparfinis timana* is readily distinguished from all cis-Andean congeners as follows: from *I. borodini* by having a deeper head (1.6-1.9 times in HL *vs*. *ca*. 2.2 times, obtained from holotype picture),

Table 1. Morphometric data for holotype and measured paratypes of *Imparfinis timana* and *I. usmai*. Measurements 2 to 21 and 31 to 33 expressed as percents of standard length and 22 to 30 as percents of head length. H: holotype; M: mean; R: range.

		Imparfinis timana (n=23)			*Imparfinis usmai* (n=42)		
		H	R	M	H	R	M
1	Standard length (mm)	74.2	44.4-76.7	-	83.4	63.5-102.5	-
2	Body depth	15.4	14.3-17.5	15.5	16.3	13.5-17.0	15.7
3	Cleithral width	15.6	14.8-17.6	16.6	16.2	13.3-18.5	15.6
4	Predorsal length	33.8	30.7-36.9	33.7	34.3	29.7-36.4	32.7
5	Dorsal-fin base	13.6	11.6-14.0	12.5	13.5	10.7-16.9	13.6
6	Length of first dorsal-fin ray	18.5	16.3-21.0	18.6	20.6	19.1-23.2	21.5
7	Dorsal fin to adipose fin	18.7	15.4-20.8	17.6	14.1	14.1-24.1	20.1
8	Preadipose length	65.1	59.0-71.1	62.9	61.2	55.2-68.0	64.3
9	Adipose-fin length	25.7	24.6-31.3	26.8	26.0	21.1-27.0	23.9
10	Adipose-fin depth	3.4	3.4-5.5	4.4	5.0	4.3-7.2	5.6
11	Length of first pectoral-fin ray	14.6	12.2-17.7	15.0	17.3	12.6-20.4	16.5
12	Prepectoral length	19.3	18.8-21.9	20.5	18.5	17.6-24.0	20.4
13	Prepelvic length	40.9	37.9-43.2	40.7	42.3	38.9-46.9	42.4
14	Pelvic-fin length	15.2	14.6-18.6	16.6	14.7	12.2-22.6	16.4
15	Preanal length	64.9	62.2-70.6	64.7	67.0	63.1-71.4	66.9
16	Anal-fin base	15.4	12.4-15.5	13.7	12.2	10.8-14.5	12.5
17	Caudal-peduncle length	22.0	19.3-25.6	22.7	21.3	19.8-25.3	22.7
18	Caudal-peduncle depth	8.1	7.1-8.7	8.1	6.6	5.6-7.8	6.8
19	Upper caudal-fin lobe length	27.2	21.9-28.0	25.7	29.2	24.4-39.2	34.0
20	Lower caudal-fin lobe length	21.2	18.4-23.8	21.6	21.6	19.4-33.3	25.1
21	Head length	19.7	19.6-23.7	21.7	21.8	19.4-24.5	21.6
22	Head width	78.7	68.1-85.8	75.4	87.4	62.2-87.4	72.8
23	Head depth	63.8	52.6-64.2	57.1	58.6	44.2-63.4	53.4
24	Mouth gape	40.6	34.1-43.9	38.2	35.3	29.9-49.4	42.1
25	Anterior-Posterior nares distance	18.0	13.5-18.4	16.8	14.5	14.5-21.2	18.6
26	Anterior internarial width	18.0	12.5-18.4	15.2	12.8	12.8-20.4	16.9
27	Posterior internarial width	21.1	16.9-22.3	19.4	16.7	15.0-22.4	18.8
28	Snout length	40.0	34.3-43.1	38.3	34.7	34.7-46.7	40.5
29	Fleshy interorbital	33.6	29.4-38.1	33.1	27.8	27.8-36.3	32.6
30	Eye diameter	19.1	16.0-19.3	17.8	17.4	14.7-22.0	18.3
31	Maxilary-barbel length	36.2	32.3-45.0	38.9	53.9	40.3-63.8	52.8
32	Outer mental-barbel length	16.2	16.0-23.1	19.1	23.7	18.6-35.3	25.8
33	Inner mental-barbel length	10.6	10.3-15.0	12.2	19.0	10.2-26.0	16.5

longer maxillary barbels (reaching pelvic fin *vs*. slightly beyond pectoral-fin base), fewer vertebrae (42-43 *vs*. 49-54), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 12-13), pelvic-fin origin at or slightly posterior to mid-distance of dorsal-fin base (*vs*. at vertical or slightly anterior to dorsal-fin origin), shorter adipose fin (3.19-4.06 times in SL *vs*. 2.67 times), fewer total anal-fin rays (11-13 *vs*. 14-15), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23-24 (*vs*. vertebra 30-31), caudal fin deeply forked (*vs*. caudal fin obliquely truncated with upper end longer and prolonged in a pointed tip), and more branched caudal-fin rays (7+8 *vs*. 6+6); from *I. cochabambae* (Fowler, 1940) by having fewer gill rakers on first gill arch (8 *vs*. 15), more vertebrae (42-43 *vs*. 41), pectoral-fin distal tip not reaching pelvic-fin origin (*vs*. surpassing pelvic-fin origin), longer adipose fin (3.19-4.06 times in SL *vs*. 4.12 times), and lower caudal-fin lobe rounded (*vs*. pointed); from *I. guttatus* by having fewer gill rakers on first gill arch (8 *vs*. 14), longer adipose fin (3.19-4.06 times *vs*. *ca.* 5.65 times, obtained from holotype picture), both caudal-fin lobes similarly pigmented (*vs*. lower caudal-fin lobe darker), and hypural 5 partially fused at base with 3+4 (*vs*. free); from *I. hasemani* by having longer maxillary barbels (reaching pelvic-fin base *vs*. not surpassing pectoral-fin distal margin), more vertebrae (42-43 *vs*. 40), fewer pleural ribs (9 *vs*. 10) and longer adipose-fin (24.6-31.3% in SL *vs*. 20.9-21.6%, obtained from measurements in Steindachner, 1915); from *I. hollandi* by having longer maxillary barbels (reaching pelvic fin *vs*. not surpassing pectoral-fin distal margin), fewer gill rakers on first gill arch (8 *vs*. 9), fewer vertebrae (42-43 *vs*. 52-53), fewer pleural ribs (9 *vs*. 11), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 12), pelvic-fin origin at or slightly posterior to mid-distance of dorsal-fin base (*vs*. at vertical or slightly posterior to dorsal-fin origin), adipose fin free from caudal fin (*vs*. continuous), fewer total anal-fin rays (11-13 *vs*. 14-15), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23-24 (*vs*. vertebra 29-30), caudal fin deeply forked (*vs*. obliquely truncated, with upper end prolonged), and more branched caudal-fin rays (7+8 *vs*. 6+5-6); from *I. longicauda* by having a longer head (4.22-5.1 times in SL *vs*. 6 times or more), and insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 8); from *I. microps* Eigenmann & Fisher, 1916 by having longer maxillary barbels (reaching pelvic-fin base *vs*. not extending beyond posterior margin of branchiostegal membrane), fewer branchiostegal rays (7-8 *vs*. 9), more gill rakers on first gill arch (8 *vs*. 4-5), fewer vertebrae (42-43 *vs*. 46-47), more pleural ribs (9 *vs*. 8), more branched pectoral-fin

rays (8-9 *vs*. 7), more posterior pelvic-fin origin (at or slightly posterior to mid-distance of dorsal-fin base *vs*. anterior to dorsal-fin origin), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 15), fewer branched anal-fin rays (7-8 *vs*. 9), anal-fin origin at vertical through adipose-fin origin (*vs*. anterior), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23-24 (*vs*. vertebra 26), and more branched caudal-fin rays (7+8 *vs*. 6+6); from *I. minutus* by having longer maxillary barbels (reaching pelvic-fin base *vs*. not surpassing distal tip of adpressed pectoral fin), more vertebrae (42-43 *vs*. 41), more pleural ribs (9 *vs*. 8), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 8-9), and longer adipose fin (3.19-4.06 times in SL *vs*. 4.7 times); from *I. mirini* by having longer maxillary barbels (reaching pelvic-fin base *vs*. scarcely beyond distal tip of adpressed pectoral fin), more vertebrae (42-43 *vs*. 38-40), adipose-fin posterior end extending more posteriorly than distal margin of adpressed anal fin (*vs*. approximately at same level), and upper caudal-fin lobe longer than lower lobe (*vs*. both caudal-fin lobes equal in length); from *I. mishky* by having fewer gill rakers on first gill arch (8 *vs*. 9), fewer branched rays on lower lobe of caudal-fin (8 *vs*. 9), longer and deeper caudal peduncle (19.3-25.6% in SL and 7.1-8.7%, respectively *vs*. 17.7-20.1% and 6.4-7.8%), and greater interorbital width (29.4-38.1% in SL *vs*. 18.5-23.1%); from *I. peruanus* by having a shorter predorsal distance (2.71-3.25 times in SL *vs*. 2.6 times), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 9), adipose-fin origin at vertical through anal-fin origin (*vs*. anterior), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23-24 (*vs*. vertebra 25), PH fused with 1+2 (*vs*. PH free); from *I. pijpersi* by having longer maxillary barbels (reaching pelvic-fin base *vs*. not surpassing distal tip of adpressed pectoral fin), longer caudal peduncle (19.3-25.6% in SL *vs*. 16.1%), shorter caudal peduncle depth (7.1-8.7% in SL *vs*. 11.0%), and longer adipose fin (24.6-31.3% in SL *vs*. 13.1%); from *I. piperatus* by having longer maxillary barbels (reaching pelvic-fin base *vs*. reaching distal tip of adpressed pectoral fin), more vertebrae (42-43 *vs*. 37), more pleural ribs (9 *vs*. 8), and insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23-24 (*vs*. vertebra 20); from *I. pristos* by having a larger size (maximum SL: 76.7 mm *vs*. 38 mm, value from Bockmann & Guazelli, 2003), shorter head (4.2-5.1 times in SL *vs*. 3.4-3.7), longer maxillary barbels (reaching pelvic-fin base *vs*. not surpassing distal tip of adpressed pectoral fin), more gill rakers on first gill arch (8 *vs*. 4-6), more vertebrae (42-43 *vs*. 33-35), more pleural ribs (9 *vs*. 6), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 6), longer adipose fin (3.19-4.06 times in SL *vs*. 5.0-5.6 times), more branched anal-fin rays (7-8 *vs*. 5-6), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23-24 (*vs*. vertebra 17-18), upper caudal-fin lobe longer than lower lobe (*vs*. both caudal-fin lobes equal in length), and more branched rays on caudal fin (7+8 *vs*. 6+7); from *I. pseudonemacheir* Mees & Cala, 1989 by having a larger size (maximum SL: 76.7 mm *vs*. 48.1 mm), shorter maxillary barbels (reaching pelvic-fin base *vs*. reaching posterior end of anal-fin base), fewer gill rakers on first gill arch (8 *vs*. 11-14), more vertebrae (42-43 *vs*. 35-36), first ray of dorsal and pectoral fins shorter than the second ray of the respective fin (*vs*. longer and extended as a filament projected beyond the margin in both fins), pectoral-fin distal end not reaching pelvic-fin origin (*vs*. reaching or surpassing pelvic-fin base), longer adipose fin (3.19-4.06 times in SL *vs*. 4.5-5.0 times), anal-fin origin at the same level of adipose-fin origin (*vs*. posterior), distal margin of adpressed anal fin anterior to adipose-fin posterior end (*vs*. posterior), upper caudal-fin lobe longer than lower lobe (*vs*. both caudal-fin lobes equal in length), and sides of body without distinct markings (*vs*. four irregular dark patches); from *I. schubarti* by having longer maxillary barbels (reaching pelvic-fin base *vs*. reaching or scarcely beyond distal tip of adpressed pectoral fin), fewer gill rakers on first gill arch (8 *vs*. 11-16), fewer vertebrae (42-43 *vs*. 39-40), longer adipose-fin base (24.6-31.3% in SL *vs*. 18.7-22.6%), and shorter preanal length (62.2-70.6% in SL *vs*. 71.0-74.7%); and from *I. stictonotus* by having shorter maxillary barbels (reaching pelvic-fin base *vs*. extending to first half of adipose-fin base), more vertebrae (42-43 *vs*. 34-38), more pleural ribs (9 *vs*. 6-8), first ray of dorsal and pectoral fins shorter than the second ray of the respective fin (*vs*. longer and extended as a filament projected beyond the margin in both fins), pectoral-fin distal end not reaching pelvic-fin origin (*vs*. reaching or surpassing pelvic-fin base), more branched anal-fin rays (7-8 *vs*. 6), both caudal-fin lobes similarly pigmented (*vs*. lower lobe darker than upper lobe), and sides of body without distinct markings (*vs*. four irregular dark patches).

Description. Morphometric data given in Table 1. Small heptapterid catfish (largest specimen 76.7 mm SL), with elongated body, triangular in cross-section at dorsal-fin origin, progressively more laterally compressed to tail region. Dorsal profile slightly convex from snout tip to dorsal-fin origin, slightly concave just posterior to dorsal-fin base to adipose-fin origin, straight and descending along adipose-fin base, then ascending along caudal peduncle. Ventral profile of head straight, slightly convex along abdomen, then straight to anal-fin origin and slightly descending along caudal peduncle.

Head conical and depressed, dorsally covered by thin skin. Snout short and broadly rounded. Mouth subterminal. Premaxillary teeth conical and pointed arranged in rectangular band with 4-5 irregular rows. Dentary with four irregular rows of teeth. Barbels dorsoventrally flattened. Maxillary barbels generally extending to pelvic-fin base, but reaching anal fin in some juvenile specimens. Anterior portion of maxillary barbel in shallow groove. Bases of outer and inner mental barbels aligned. Outer mental barbels surpass pectoral-fin base. Inner mental barbels reach pectoral-fin origin. Eye dorsolateral in position. Orbital margin not free, but delimited by shallow groove, more conspicuous along dorsal rim. Anterior naris tubular. Posterior naris rounded, slightly closer to anterior ocular margin than to anterior naris, bordered by

low fleshy margin, with notch in posterior border. Nares disposed in trapezoidal arrangement. Anterior internarial width slightly shorter (mean % in HL: 15.2) than posterior internarial width (mean % in HL: 19.4). Branchiostegal membrane free, supported by 7-8 rays and joined to isthmus only at anteriormost point. Gill rakers on first gill arch eight, 5-6 arranged on anterior margin of ceratobranchial, one on cartilage between ceratobranchial and epibranchial, and 1-2 on epibranchial.

Lateral line canal complete, extending to basal portion of interradial membrane of middle caudal-fin rays. Supraorbital pore S1 medially adjacent to anterior naris. S2+I2 midway between anterior and posterior nares, at end of posteriorly directed membranous tubule originating from commissure connecting supraorbital and infraorbital canals, closer to supraorbital canal. S3 posteriorly adjacent to posterior naris and S4 located approximately at mid-distance between posterior naris and eye margin and at level of medial border of posterior naris. Both S3 and S4 originating from anterior and posterior ends of bifurcated lateral membranous branch with T-shape. S7 located dorsomedial and posterior to eye, originating from short membranous tubule running posteriorly. S8 (corresponding to parietal branch), posteromedial to eye. Parietal branch running posteriorly on frontal bone, and ending close to articular suture with parieto-supraoccipital bone. Infraorbital pore I1 laterally adjacent to anterior naris, just between naris and maxillary barbel base. I3 posterior to maxillary barbel base. I4 at vertical through anterior eye margin. I5 at vertical through posterior eye margin. I6 posterior to eye at end of short ventroposterior membranous tubule. Preoperculomandibular canal with 11 pores. Dentary with seven pores. Submental pores (PM1) paired and last mandibular pore (PM7) at level of articulation between anguloarticular and quadrate bones. Preopercle with three pores. Anterior pore (PM8) originating between subpreopercle and preopercle. Middle pore (PM9) originating from membranous tubule passing above interopercle and posterior pore (PM10) from membranous tubule passing above ventral portion of opercle. Last preopercular pore (PO1+PM11) at end of membranous branch dorsal to dorsal edge of opercle, close to articulation between opercle and hyomandibula. PO2 corresponding to pterotic branch, located dorsal to dorsoposterior corner of opercular margin. Axillary branch (LL1) ventral, running posterior to extrascapular. Accessory branch (PO3) dorsal to lateral line canal, ending approximately at axilar pore level.

Precaudal vertebrae 12 and caudal vertebrae 30-31, totaling 42-43 vertebrae. First hemal spine on vertebra 16-17. Pleural ribs nine. Anus approximately at mid-length of pelvic fin, closer to pelvic-fin base than anal-fin origin. Urogenital papilla separated from anus by distance approximately equivalent to length of papilla.

Pectoral fin i,8-9. Basal portion of simple ray ossified, distal portion soft and segmented. First and second branched rays longest. Distal margin of pectoral fin straight. Pelvic fin i,5. First pelvic-fin ray thick and shortest, second and third branched rays longest. Pelvic-fin origin at or slightly posterior to mid-distance of dorsal-fin base. Dorsal fin lacking spinelet (*i.e.* first lepidotrichium), with one simple (second lepidotrichium), and six branched rays. Dorsal fin triangular, second ray longest. Supporting fin elements represented by seven proximal and six distal radials. Last two branched rays articulating separately with last two pterygiophores. First proximal radial inserted posterior to neural spine of vertebra 7 and last proximal radial inserted anterior to neural spine of vertebra 13. Adipose fin low, its maximum height at mid-length, and longer than anal fin, with free posterior lobe. Adipose-fin origin at vertical through anal-fin origin. Anal fin with 2-3 procurrent rays, associated with first proximal radial, two simple rays and 7-8 branched rays. Anal-fin distal margin rounded. Anal fin supported by 10 proximal and nine distal radials. First proximal radial posterior to hemal spine of vertebra 23-24 and last proximal radial anterior to hemal spine of vertebra 30-31. Caudal fin deeply forked with i,7+8,i principal rays. Upper caudal-fin lobe pointed and longer than lower lobe. Lower caudal-fin lobe rounded. Dorsal procurrent caudal-fin rays 13-16, located posterior to vertebrae PU_5-PU_6. Last 2-3 rays segmented. Ventral procurrent caudal-fin rays 13-15, located posterior to vertebrae PU_6-PU_7. Last 2-3 rays segmented. Caudal skeleton PH, 1+2, 3+4 partially fused at base with 5. Long epural present.

Coloration in alcohol. Body brownish on dorsal and lateral surfaces, and ventral region cream. Conspicuous, dark mid-lateral stripe, extending from posterior margin of opercle to caudal-fin origin. Dorsal surface of maxillary barbel pigmented. Outer mental barbel scarcely pigmented at basal portion. Inner mental barbel light-colored. Parieto-supraoccipital region densely pigmented. Dark blotch on opercle. Four dark saddles in dorsum, first saddle crossing predorsal region, second saddle just in front of dorsal-fin origin, third saddle on posterior half of dorsal-fin base, and last saddle between dorsal and adipose fins. Rays of pectoral, dorsal and caudal fins darkly pigmented. Interradial membranes hyaline. Distal portion of pectoral fin light-colored. First pelvic-fin rays with chromatophores scattered. Anal and adipose fins light-colored.

Distribution. This species is only known from the type locality at the río Guarapas, a small tributary of the upper río Magdalena basin (Fig. 2).

Etymology. Timana is used as a noun in apposition and refers to the indigenous people inhabiting the west flank of the eastern cordillera, in the Colombian Andes, from San Agustin to Pitalito (Departamento del Huila).

Imparfinis usmai, new species
Fig. 3

Holotype. IMCN 4812, 83.4 mm SL, Colombia, Departamento del Tolima, Municipio Coello, vereda Potrerillo, quebrada Potrerilla, tributary of río Coello, río Magdalena basin, 04°16'57.9"N 75°01'53.8"W, 13 Jan 2007, A. Ortega-Lara & F. Villa-Navarro.

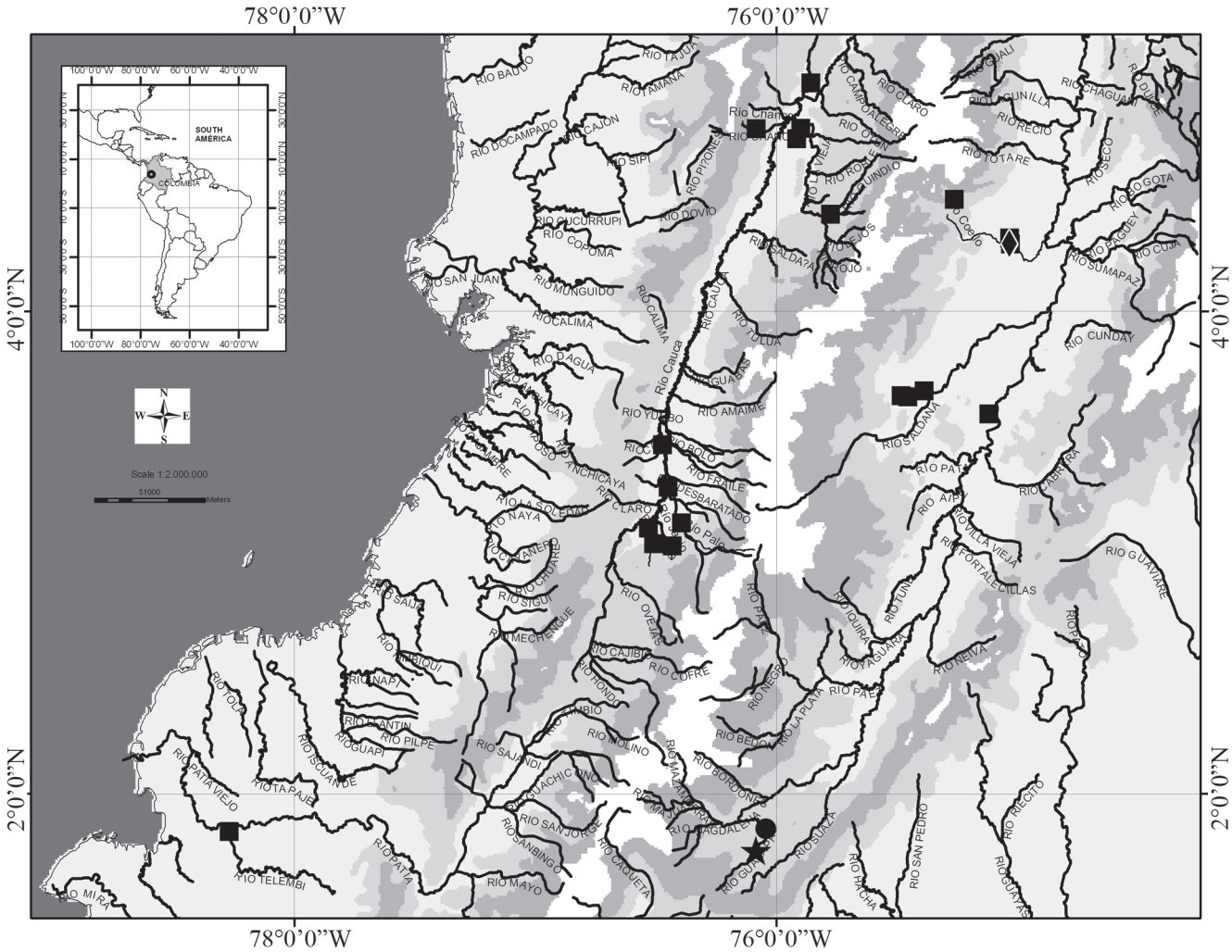

Fig. 2. Map of midwestern region of Colombia showing geographic distribution of *Imparfinis timana* (circle, star: holotype locality) and *I. usmai* (squares, diamond: holotype locality). Some symbols represent more than one lot and/or locality.

Paratypes: Colombia: río Cauca basin: Departamento del Cauca: IMCN 168, 9, 62.6-88.4 mm SL, Municipio Suarez, río Cauca, km 21 in the road to Suárez, 03°25'N 76°40'W, 10 Sep 2002, A. Ortega-Lara. IMCN 2301, 7, 48.1-84.9 mm SL, Municipio Santander de Quilichao, río Quinamayó, road to La Balsa, 03°25'N 76°35'W, 26 Jun 2002, A. Ortega-Lara. IMCN 2439, 7, 37.5-75.6 mm SL, Municipio Santander de Quilichao, mouth of río Quinamayó in río Cauca, 03°25'N 76°38'W, 23 Jul 2002, A. Ortega-Lara. IMCN 3842, 10, 40.6-73.3 mm SL, Municipio Caloto, río Japio, at Hacienda Japio, road to Miranda, 03°01'N 76°24'W, 7 Oct 2004, A. Ortega-Lara. IMCN 3914, 8, 47.5-89.3 mm SL (1 CS, 82.5 mm SL), Municipio Guachené, río Palo, at the bridge of Guachené, 03°07'N 76°22'W, 17 Jun 2002, A. Ortega-Lara. Departamento del Valle del Cauca: CZUT-IC 1158, 2, 51.3-55.3 mm SL, río Cauca, 25 Jun 2002, A. Ortega-Lara. IMCN 1164, 2, 23.0-79.5 mm SL, Municipio Cartago, río La Vieja, feeder of irrigation district, 04°45'39.4"N 75°53'63.2"W, 990 m asl, 18 Jul 2002, S. Usma, L. Meza, B. Arias, W. Arias & C. Araque. IMCN 1166, l, 37.2 mm SL, same locality and collectors as IMCN 1164, 24 Jun 2002. IMCN 1179, 5, 48.8-92.6 mm SL, MBUCV-V-30943, 2 ,71.3-89.1 mm SL (1 CS, 89.1 mm SL), MBUCV-V-35640, 88.7 mm SL, same locality and collectors as IMCN 1164, 21 Aug 2002. IMCN 1176, 7, 53.9-86.8 mm SL (2 CS, 53.9-85.8 mm SL), MBUCV-V-33734, 3, 61.1-73.7 mm SL (1 CS, 61.1 mm SL), Municipio Cartago, río La Vieja, sector Piedras de Moler, road to Alcalá, 04°42'32.6"N 75°51'36"W, 1100 m asl, 18 Jul 2002, same collectors as IMCN 1164. IMCN 1178, 3, 48.5-75.0 mm SL, same locality as IMCN 1176, 24 Jun 2002, S. Usma, L. Meza, B. Arias, W. Arias & C. Araque. IMCN 1180, 1, 72.8 mm SL, Municipio Cartago, río La Vieja, at the airport, 4°47'18.9"N 75°55'71.0"W, 980 m asl, 18 Jul 2002, same collectors as IMCN 1164. IMCN 3277, 1 CS, 76.3 mm SL, Municipio Jamundí, río Cauca, sector El Hormiguero, 02°42'25"N 76°41'37"W, Mar 2003, A. Ortega-Lara. IMCN 3278, 1 CS, 64.5 mm SL, Municipio Ansermanuevo, río Chanco, sector Hacienda Arauca, 04°47'50"N 75°59'42"W, 920 m asl, 18 Mar 2002, A. Ortega-Lara. Departamento del Quindío: IMCN 1170, 3, 67.5-83.2 mm SL (1 CS, 67.5 mm SL), Municipio Armenia, río Quindío, Tarapacá, 04°23'74"N 75°45'94.9"W, 1130 m asl, 22 Aug 2002, S. Usma, L. Meza, B. Arias W. Arias & C. Araque. Departamento de Risaralda: IAvH-P 7160, 4, 55.0-70.7 mm SL, IMCN 3373, 8, 33.3-85.6 mm SL, Municipio La Virginia, río Risaralda, downstream of mouth of río Mapa, 04°55'N 75°51'W, 24 Feb 2005, A. Ortega-Lara. Río

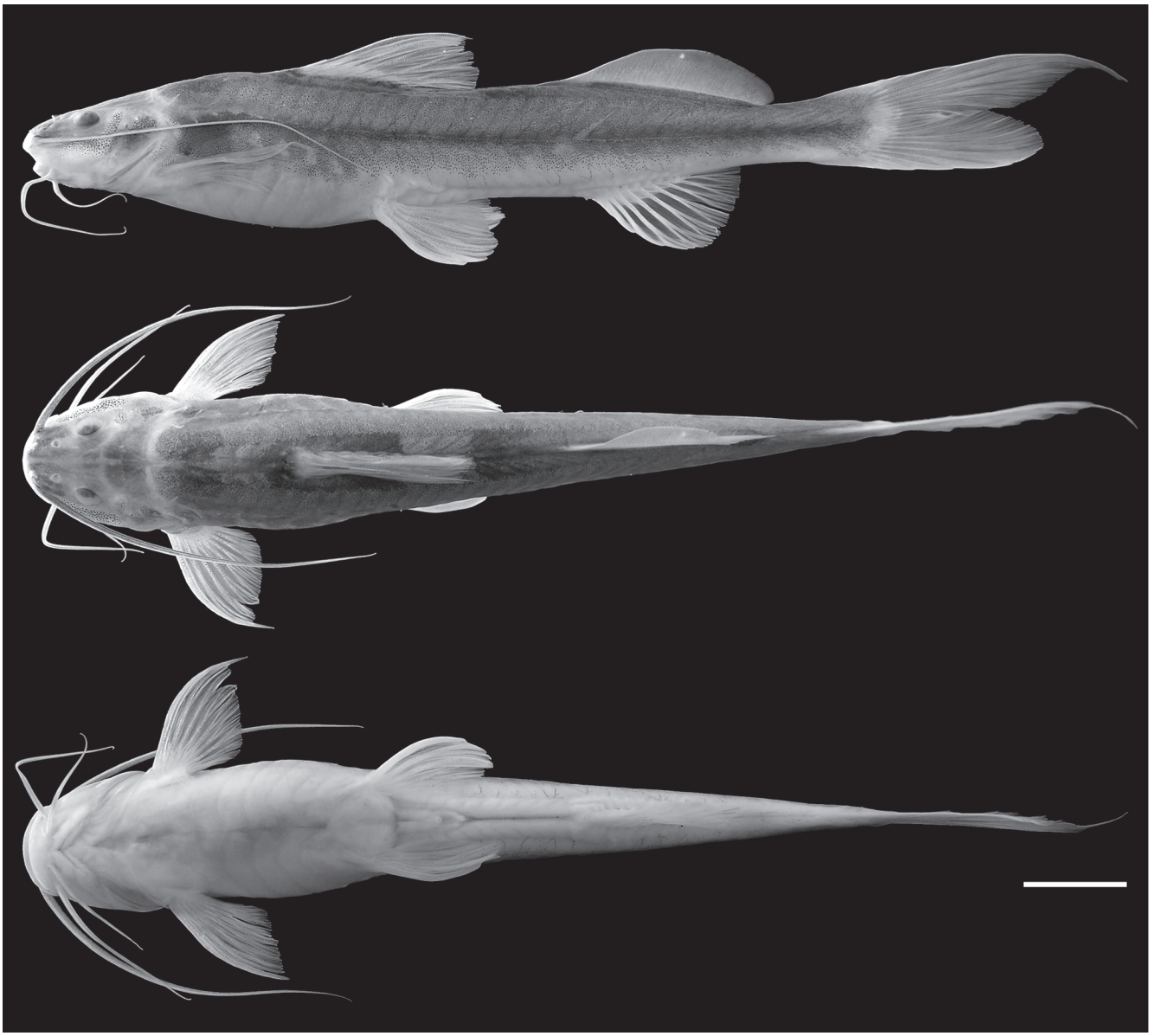

Fig. 3. *Imparfinis usmai*, holotype, IMCN 4812, 83.4 mm SL, Colombia, Departamento del Tolima**,** Municipio Coello, vereda Potrerillo, quebrada Potrerilla, tributary of río Coello, río Magdalena basin, 04°16’57.9”N 75°01’53.8”W. Scale bar = 1 cm.

Fig. 4. *Imparfinis usmai*, live specimen (IMCN 3842, 73.6 mm SL), Colombia, Cauca, Caloto, río Japio, upper río Cauca basin, 03°01’N 76°24’W.

Magdalena basin: Departamento del Tolima: CZUT-IC 91, 1, 84.9 mm SL, Municipio Coello, vereda Potrerillo, quebrada Potrerilla, tributary of río Coello, 04º16'57.9"N 75º01'53.8"W, 21 Mar 2003, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 214, 4, 63.3-88.9 mm SL, same locality and collectors as CZUT-IC 91, 2 May 2003. CZUT-IC 98, 15, 60.9-100.8 mm SL (1 CS, 60.9 mm SL), Municipio Coello, quebrada Gualanday, 04°18'17.5"N 75°02'01"W, 9 May 2003, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 184, 10, 70.8-90.5 mm SL, Municipio Coello, río Coello, 50 m downriver from feeder of irrigation district USOCOELLO, Inspección de Gualanday, 04°16'50.3"N 75°01'50.7"W, 28 Mar 2003, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 637, 3, 65.7-89.2 mm SL, same locality and collectors as CZUT-IC 184, 20 Sep 2003. CZUT-IC 792, 4, 65.9-96.3 mm SL, same locality and collectors as CZUT-IC 184, 27 Jul 2003. CZUT-IC 229, 3, 82.8-92.7 mm SL, same locality as CZUT-IC 184, 2 May 2003, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 874, 30, 57.0-85.7 mm SL, río Tetuán, 03°45'N 75°20'W, 5 Oct 2003, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 892, 8, 20.9-90.8 mm SL, same locality as CZUT-IC 874, 6 Jun 2003, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 1053, 1, 70.8 mm SL, río Anchique, 03º34'34.8"N 75º07'13"W, 21 Mar 2004, A. Ortega-Lara, L. García-Melo, P. Zúñiga-Upegui, N. Briñez-Vasquez & F. Villa-Navarro. CZUT-IC 1155, 5, 28.8-51.3 mm SL, quebrada Silletero, tributary of río Cauca, 10 Feb 2004, A. Ortega-Lara. CZUT-IC 1158, 2, 50.6-56.0 mm SL, río Cauca, 21 Jun 2002, A. Ortega-Lara. CZUT-IC 1345, 11, 31.5-44.2 mm SL, mouth of río Amoya, 03º40'23.7"N 75º23'24.5"W, 8 Feb 2005, L. García-Melo, N. Briñez-Vasquez, D. Castro-Roa, M. Herrada-Yara & F. Villa-Navarro. CZUT-IC 1379, 2, 53.3-57.2 mm SL, Municipio Chaparral, cuevas de Tuluni, vereda Tuluni, 03º38'52.2"N 75º27'24.5"W, 9 Jan 2005, L. García-Melo, N. Briñez-Vasquez, D. Castro-Roa, M. Herrada-Yara & F. Villa-Navarro. CZUT-IC 1419, 2, 41.2-49.5 mm SL, CZUT-IC 1431, 10, 45.8-76.5 mm SL, Municipio Chaparral, quebrada Tuluni, vereda Tuluni, 03º39'08.9"N 75º29'05"W, 10 Feb 2005, L. García-Melo, N. Briñez-Vasquez, D. Castro-Roa, M. Herrada-Yara & F. Villa-Navarro. IMCN 3847, 7, 25.1-96.4 mm SL, MBUCV-V-33736, 4, 60.3-89.7 mm SL (1 CS, 60.3 mm SL), collected with the holotype.

Non-type material. Colombia: **río Patía basin:** Departamento del Cauca: FMNH 58131, 2, 61.2-68.9 mm SL, río Telembí, downstream from Barbacoas, lower basin tributary of río Patía. **Río Cauca basin:** Departamento del Valle del Cauca: FMNH 58129, 3, 67.2-78.7 mm SL, río Cauca at Cali. FMNH 58132, 8, 32.3-40.8 mm SL, Cali, 1010 m asl. IMCN 2475, 1, 35.2 mm SL, Municipio Cartago, río La Vieja, sector Piedras de Moler, road to Alcalá, 04°42'32.6"N 75°51'36"W, 1100 m asl. IMCN 2635, 4, 61.2-69.6 mm SL, Municipio Ansermanuevo, río Cañaveral, to Ansermanuevo, La Virginia. MCZ 35873, 2, 30.6-36.8 mm SL, upper río Cauca. Departamento del Quindío: IMCN 2394, 2, 38.3-59.8 mm SL, Municipio Armenia, río Quindío, Tarapacá, 04°23'74"N 45°45'94.9"W, 1130 m asl.

Diagnosis. This species is distinguished from congeneric trans-Andean species by having the first ray of dorsal fin longest and slightly projected or not beyond dorsal-fin margin, length of first dorsal-fin ray: 19.1-23.2% in SL (*vs*. slightly shorter than second ray in *I. lineatus*, 14.0-17.6%; *I. spurrellii*, 16.0-17.6%; and *I. timana*, 16.3-21.0%; or extended as a conspicuous and long filament beyond fin margin in *I. nemacheir*, 29.2-33.1%); and by the intermediate long upper caudal-fin lobe (24.4-39.2% in SL *vs*. 22.7-26.0% in *I. lineatus*; 38.2-52.1% in *I. nemacheir*; 22.8-26.5% in *I. spurrellii*; 21.9-28.0% in *I. timana*). *Imparfinis usmai* differs from all trans-Andean species, except *I. nemacheir*, by having a longer maxillary barbel (40.3-63.8% in SL *vs*. 24.0-32.6% in *I. lineatus*; 32.1-35.2% in *I spurrellii;* 32.3-45.0% in *I. timana*), and by the number of vertebrae (39-40 *vs*. 42 in *I. lineatus*; 45 in *I. spurrellii*; 42-43 in *I. timana*). Specimens of *Imparfinis usmai* exceeding 30 mm SL, are readily distinguished from all trans-Andean species, except *I. timana*, by having an upper caudal-fin lobe pointed and longer than lower lobe, and a lower lobe rounded, with both branches of lowermost branched ray approximately equal in length (*vs*. both lobes rounded and approximately symmetrical in *I. lineatus* and *I. spurrellii*; both lobes pointed, with lower branch of lowermost branched ray longer than upper branch, and extended as a filament in *I. nemacheir*). *Imparfinis usmai* can be recognized from *I. lineatus* and *I. nemacheir* by the longer adipose-fin (21.1-27.0% in SL *vs*. 17.2-18.6% in *I. lineatus*; 19.0-21.8% in *I. nemacheir*). *Imparfinis usmai* is further distinguished from *I. lineatus* and *I. timana* by its shorter caudal peduncle depth (5.6-7.8% in SL *vs*. 8.1-8.4% in *I. lineatus*; 7.1-8.7% in *I. timana*). *Imparfinis usmai* is further recognized from *I. spurrellii* and *I. timana* by having 7-8 gill rakers on the first ceratobranchial (*vs*. 10-11 in *I. spurrellii*; 5-6 in *I. timana*). *Imparfinis usmai* can also be distinguished from *I. spurrellii* by its greater interorbital width (27.8-36.3% in HL *vs*. 23.6-24.3% in *I. spurrellii*). Specimens of *Imparfinis usmai* exceeding 30 mm SL differs from all cis-Andean congeners, except *I. microps*, *I. mirini*, *I. mishky*, and *I. piperatus*, by having a forked caudal fin, with upper lobe longer and pointed, and lower lobe rounded (*vs.* both caudal-fin lobes pointed). *Imparfinis usmai* is further distinguished from *I. borodini* and *I. hollandi* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. not exceeding pectoral-fin distal margin), fewer vertebrae (39-40 *vs*. 49-54), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 12-13), pelvic-fin origin at or slightly posterior to mid-distance of dorsal-fin base (*vs*. at vertical or slightly displaced from dorsal-fin origin), fewer total anal-fin rays (12-13 *vs*. 14-15), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23 (*vs*. vertebra 29-31), caudal fin deeply forked (*vs*. caudal fin obliquely truncated with upper end prolonged), and more branched caudal-fin rays (7+8 *vs*. 6+5-6); additionally *I. usmai* is distinguished from *I. borodini* by having a shorter adipose fin (3.70-4.74 times in SL *vs*. 2.67 times); and from *I. hollandi* by having fewer pleural ribs (8-9 *vs*. 11), and adipose fin free from caudal fin (*vs*. continuous). *Imparfinis usmai* is recognized from *I. pseudonemacheir* and *I. stictonotus* by having shorter maxillary barbels (not reaching adipose-fin origin *vs*. extending to first half of adipose-fin base or beyond),

more vertebrae (39-40 *vs*. 34-38), and sides of body without distinct markings (*vs*. four irregular dark patches); additionally *I. usmai* is distinguished from *I. pseudonemacheir* by having a larger size (maximum SL: 100.8 mm *vs*. 48.1 mm), fewer gill rakers on first gill arch (8-10 *vs*. 11-14), distal margin of adpressed anal fin anterior to adipose-fin posterior end (*vs*. posterior), upper caudal-fin lobe longer than lower lobe (*vs*. both caudal-fin lobes equal in length); and from *I. stictonotus* by having more branched anal-fin rays (7-8 *vs*. 6), both caudal-fin lobes similarly pigmented (*vs.* lower lobe darker than upper lobe). *Imparfinis usmai* can be differentiated from remaining cis-Andean congeners as follows: from *I. cochabambae* by having fewer gill rakers on first gill arch (8-10 *vs*. 15), and fewer vertebrae (39-40 *vs*. 41); from *I. guttatus* by having fewer gill rakers on first gill arch (8-10 *vs*. 14), longer adipose fin (3.70-4.74 times *vs*. *ca*. 5.65 times, obtained from holotype picture), and both caudal-fin lobes similarly pigmented (*vs*. lower caudal-fin lobe darker); from *I. hasemani* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. not exceeding pectoral-fin distal margin), and fewer pleural ribs (8-9 *vs*. 10); from *I. longicauda* by having a longer head (4.08-5.15 times in SL *vs*. 6 times or more), and insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 8); from *I. microps* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. not extending beyond posterior margin of branchiostegal membrane), fewer branchiostegal rays (6-7 *vs*. 9), more gill rakers on first gill arch (8-10 *vs*. 4-5), fewer vertebrae (39-40 *vs*. 46-47), more branched pectoral-fin rays (9 *vs*. 7), more posterior pelvic-fin origin (at or slightly posterior to mid-distance of dorsal-fin base *vs*. anterior to dorsal-fin origin), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 15), fewer branched anal-fin rays (7-8 *vs*. 9), anal-fin origin posterior to adipose-fin origin (*vs*. anterior), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23 (*vs*. vertebra 26), and more branched caudal-fin rays (7+8 *vs*. 6+6); from *I. minutus* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. not exceeding distal tip of adpressed pectoral fin), fewer vertebrae (39-40 *vs*. 41), and insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 8-9); from *I. mirini* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. scarcely beyond distal tip of adpressed pectoral fin), adipose-fin posterior end extending more posteriorly than distal margin of adpressed anal fin (*vs*. approximately at same level), and upper caudal-fin lobe longer than lower lobe (*vs*. both caudal-fin lobes equal in length); from *I. mishky* by having fewer branched rays on lower lobe of caudal fin (8 *vs*. 9), shorter anal-fin base (10.8-14.5% in SL *vs*. 13.1-16.3%), longer caudal peduncle (19.8-25.3% in SL *vs*. 17.7-20.1%), and greater interorbital width (27.8-36.3% in SL *vs*. 18.5-23.1%); from *I. peruanus* by having a shorter predorsal distance (2.75-3.37 times in SL *vs*. 2.6 times), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 9), and insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23 (*vs*. vertebra 25); from *I. pijpersi* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. not exceeding distal tip of adpressed pectoral fin), longer caudal peduncle (19.8-25.3% in SL *vs*. 16.1%), shorter caudal peduncle depth (5.6-7.8% in SL *vs*. 11.0%), and longer adipose fin (21.1-27.0% in SL *vs*. 13.1%); from *I. piperatus* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. reaching distal tip of adpressed pectoral fin), more vertebrae (39-40 *vs*. 37), and insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23 (*vs*. vertebra 20); from *I. pristos* by having a larger size (maximum SL: 100.8 mm *vs*. 38.0 mm, value from Bockmann & Guazelli, 2003), shorter head (4.08-5.15 times in SL *vs*. 3.4-3.7), longer maxillary barbels (surpassing pelvic-fin base *vs*. not exceeding distal tip of adpressed pectoral fin), more gill rakers on first gill arch (8-10 *vs*. 4-6), more vertebrae (39-40 *vs*. 33-35), more pleural ribs (8-9 *vs*. 6), insertion of first dorsal-fin pterygiophore posterior to neural spine of vertebra 7 (*vs*. vertebra 6), longer adipose fin (3.70-4.74 times in SL *vs*. 5.0-5.6 times), more branched anal-fin rays (7-8 *vs*. 5-6), insertion of first anal-fin pterygiophore posterior to hemal spine of vertebra 23 (*vs*. vertebra 17-18), upper caudal-fin lobe longer than lower lobe (*vs*. both caudal-fin lobes equal in length), and more branched rays on caudal fin (7+8 *vs*. 6+7); and from *I. schubarti* by having longer maxillary barbels (surpassing pelvic-fin base *vs*. reaching or scarcely beyond distal tip of adpressed pectoral fin), fewer gill rakers on first gill arch (8-10 *vs*. 11-16), longer adipose fin base (21.1-27.0% in SL *vs*. 18.7-22.6%), and shorter preanal length (63.1-71.4% in SL *vs*. 71.0-74.7%).

Description. Morphometric data given in Table 1. Small heptapterid catfish (largest specimen 100.8 mm SL), with elongated body, triangular in cross-section at dorsal-fin origin, progressively more laterally compressed to tail region. Dorsal profile slightly convex from snout tip to dorsal-fin origin, slightly concave just posterior to dorsal-fin base to adipose-fin origin, straight and descending along adipose-fin base, then ascending along caudal peduncle. Ventral profile of head straight, slightly convex along abdomen, then straight to anal-fin origin and slightly descending along caudal peduncle.

Head conical and depressed, dorsally covered by thin skin. Snout short and broadly rounded. Mouth subterminal. Premaxillary teeth conical and pointed arranged in rectangular band with 4-5 irregular rows. Dentary with 4-5 irregular rows of teeth. Barbels dorsoventrally flattened. Maxillary barbels surpassing pelvic-fin base. Anterior portion of maxillary barbel in shallow groove, extending below eye. Bases of outer and inner mental barbels aligned. Outer mental barbels surpass pectoral-fin base. Inner mental barbels reach pectoral-fin origin. Eye dorsolateral in position. Orbital margin not free, but delimited by shallow groove, more conspicuous along dorsal rim. Anterior naris tubular. Posterior naris triangular, slightly closer to anterior ocular margin than to anterior naris, bordered by low fleshy margin, restricted to anterolateral rim. Nares disposed in trapezoidal arrangement. Anterior internarial width slightly shorter (mean % in HL

17.5) than posterior internarial width (mean % in HL 21.6). Branchiostegal membrane free, supported by 6-7 rays and joined to isthmus only at anteriormost point. Gill rakers on first gill arch 8-10, 7-8 arranged on anterior margin of ceratobranchial, one on cartilage between ceratobranchial and epibranchial and 0-1 on epibranchial.

Lateral line canal complete, extending to basal portion of interradial membrane of middle caudal-fin rays. Supraorbital pore S1 medially adjacent to anterior naris. S2+I2 between anterior and posterior nares, slightly closer to posterior naris, at end of posteriorly directed membranous tubule originating from commissure connecting supraorbital and infraorbital canals, closer to supraorbital canal. S3 just at posterior rim of posterior naris and S4 located posterior to posterior naris and at level of anterior eye margin. Both S3 and S4 originating from anterior and posterior ends of bifurcated lateral membranous branch with T-shape. S8 (corresponding to parietal branch), posteromedial to eye. Parietal branch running posteriorly on frontal bone, and ending close to articular suture with parieto-supraoccipital bone. Infraorbital pore I1 laterally adjacent to anterior naris, just between naris and maxillary barbel base. I3 posterior to maxillary barbel base. I4 at vertical through anterior eye margin. I5 at vertical through posterior eye margin. I6 posterior to eye at end of short ventroposterior membranous tubule. Preoperculomandibular canal with 11 pores. Dentary with seven pores. Submental pores (PM1) paired and last mandibular pore (PM7) at level of articulation between anguloarticular and quadrate bones. Preopercle with three pores. Anterior pore (PM8) originating between subpreopercle and preopercle. Middle pore (PM9) originating from membranous tubule passing above interopercle and posterior pore (PM10) from membranous tubule passing above ventral portion of opercle. Last preopercular pore (PO1+PM11) at end of membranous branch, at level of posterior process of hyomandibula. PO2 corresponding to pterotic branch, located dorsal to dorsoposterior corner of opercular margin. Axillary branch (LL1) ventral, running posterior to extrascapular. Accessory branch (PO3) dorsal to lateral line canal, ending approximately at axilar pore level.

Precaudal vertebrae 11-13 and caudal vertebrae 27-29, totaling 39-40 vertebrae. First hemal spine on vertebra 15-16. Pleural ribs eight or nine. Anus approximately at mid-length of pelvic fin, closer to pelvic-fin base than anal-fin origin. Urogenital papilla separated from anus by distance approximately equivalent to length of papilla.

Pectoral fin i,9. Basal portion of simple ray ossified, distal portion soft and segmented. Pectoral fin triangular, first ray sometimes slightly projected beyond fin margin. Distal margin of pectoral fin slightly convex. Pelvic fin i,5. First pelvic-fin ray thick and shortest, first and second branched rays longest. Pelvic-fin origin at or slightly posterior to mid-distance of dorsal-fin base. Dorsal fin lacking spinelet (*i.e.* first lepidotrichium), with one simple (second lepidotrichium), and six branched rays. Dorsal fin triangular, first ray longest, sometimes slightly projected beyond fin margin to less than 10% length of second ray. Supporting fin elements represented by seven proximal and six distal radials. Last two branched rays articulating separately with last two pterygiophores. First proximal radial inserted posterior to neural spine of vertebra 7 and last proximal radial inserted anterior to neural spine of vertebra 13-14. Adipose fin low, its maximum height at anterior third, and longer than anal fin, with free posterior lobe. Adipose-fin origin anterior to anal-fin origin. Anal fin with 2-3 procurrent rays, associated with first proximal radial, 2-3 simple rays and 7-8 branched rays (total of ten principal rays). Anal-fin distal margin rounded. Anal fin supported by 9-10 proximal and 8-9 distal radials. First proximal radial posterior to hemal spine of vertebra 23 and last proximal radial anterior to hemal spine of vertebra 28-29. Caudal fin deeply forked with i,7+8,i principal rays. Upper caudal-fin lobe pointed and longer than lower lobe in adult specimens and juveniles longer than 30 mm SL; both lobes pointed but not prolonged as filaments, and about same size, in juvenile specimens shorter than 30 mm SL. Lower caudal-fin lobe rounded in specimens exceeding 30 mm SL, with both branches of lowermost branched ray approximately equal in length. Dorsal procurrent caudal-fin rays 14-17, located posterior to vertebrae PU_5-PU_6. Last two rays segmented. Ventral procurrent caudal-fin rays 13-14, located posterior to vertebrae PU_6-PU_7. Last three rays segmented. Caudal skeleton PH, 1+2, 3+4, 5 (MBUCV-V-30943 CS specimen with hypurals 3+4 partially fused with 5 at base). Long epural present.

Coloration. Live specimens as shown in Fig. 4, dorsal and lateral surface of body purplish brown, abdominal surface cream. Dorsal and lateral surface of head and dorsal surface of predorsal region greenish yellow. Dorsal surface of barbels brown, and ventral surface of mental barbels white. Gold iridescent blotch on opercular region. Four dark brown saddles on dorsum, first saddle crossing predorsal region, second saddle just in front of dorsal-fin origin, third saddle on posterior half of dorsal-fin base, and last saddle between dorsal and adipose fins. Humeral region with black diffuse blotch continuous posteriorly with midlateral diffuse band. Fin rays of dorsal, pectoral, pelvic, and caudal fins yellowish brown. Interradial membrane of dorsal fin hyaline and membrane of pectoral fin light yellow. Adipose fin light yellow, with dark chromatophores disperse on fin base. In alcohol, body brownish on dorsal and lateral surfaces and cream on ventral surface. Conspicuous dark mid-lateral stripe, extending from posterior margin of opercle to caudal-fin origin. Dorsal surface of maxillary barbels pigmented. Dorsal surface of mental barbels with sparse chromatophores. Parieto-supraoccipital region densely pigmented. Opercle with dark blotch, some chromatophores grouped below eye, along region corresponding to preopercle. Rays of pectoral, dorsal, anal, and caudal fins darkly pigmented. Interradial membranes hyaline. Mid-portion of pectoral and pelvic-fin

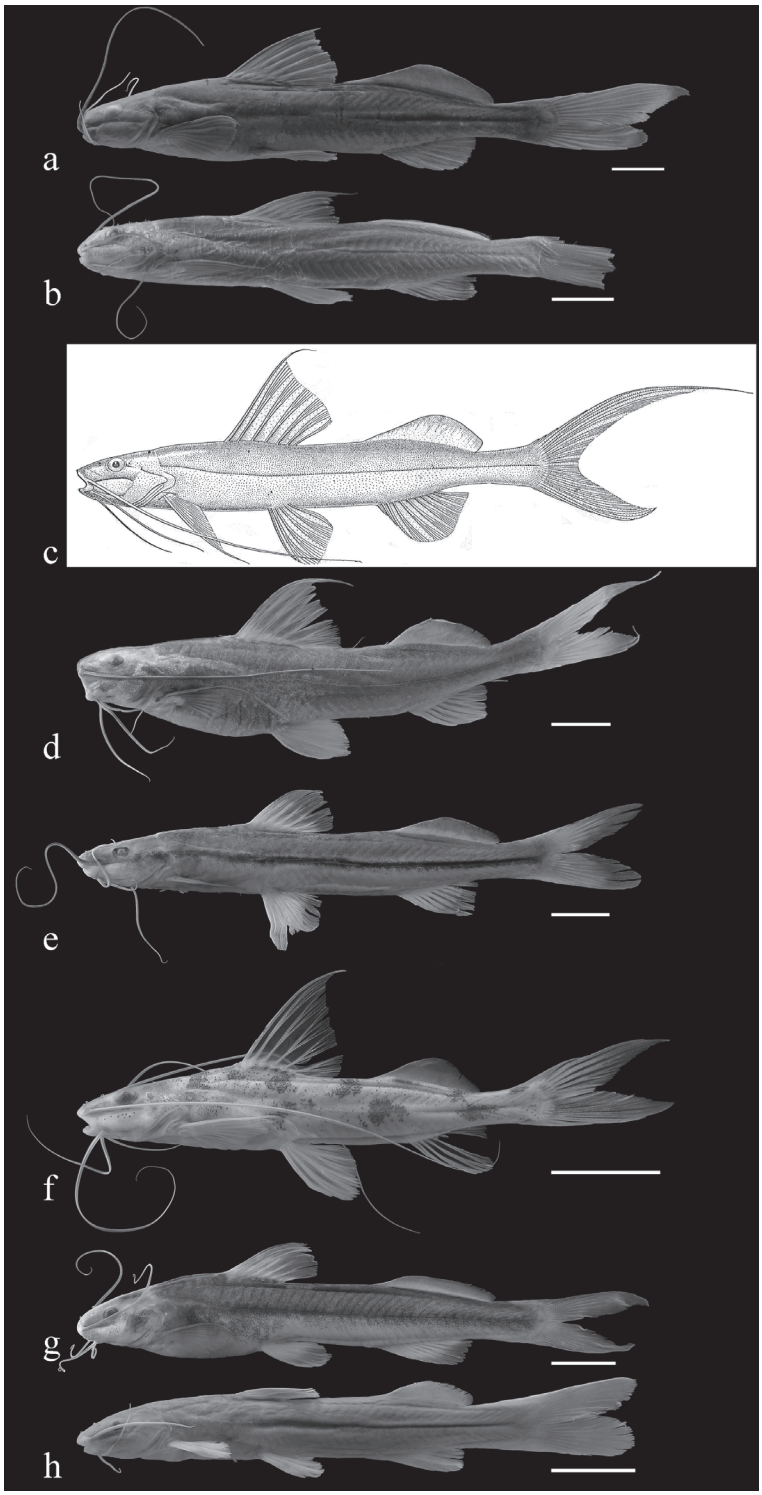

Fig. 5. Trans-Andean species of *Imparfinis* and *I. pseudonemacheir* from Venezuelan Orinoco basin. Scale bars 1 cm. (**a**) *I. usmai*, MBUCV-V-35640, 88.7 mm SL, Colombia, Valle del Cauca, Cartago, río La Vieja, Valle Cartago, upper río Cauca basin; (**b**) *I. nemacheir*, FMNH 58127 (ex CM 7125), 105.0 mm SL, holotype of *Nannorhamdia nemacheir*, photograph by M. Littmann, FMNH Division of Fishes; (**c**) *I. nemacheir*, holotype of *N. nemacheir*, illustration from Eigenmann (1922); (**d**) *I. nemacheir*, MHNLS 15453, 81.4 mm SL, Venezuela, Trujillo, río Pocó, Lago de Maracaibo basin; (**e**) *I. spurrellii*, ICN-MHN 5532, 82.0 mm SL, Colombia, Chocó, río San Juan; (**f**) *I. pseudonemacheir*, MBUCV-V-28656, 48.1 mm SL, Venezuela, Anzoategui, río Atapirire, where crossed by the road between Manasma and Atipirire, río Orinoco basin; (**g**) *I. timana*, IAvH-P 10696, 74.2 mm SL, holotype, Colombia, Huila, río Guarapas, in the mouth of quebrada La Quebradona, río Magdalena basin; (**h**) *I. lineatus*, MBUCV-V-32675, 69.4 mm SL, Costa Rica, Puntarenas, río Peje, 13 km S of San Isidro General.

rays with chromatophores scattered and distal margin hyaline. Adipose fin with chromatophores at basal portion and distal margin hyaline.

Distribution. This species is broadly distributed along the upper basin of río Cauca and río Magdalena, and in the lower río Patía basin on the Pacific slope of western cordillera of Colombia (Fig. 2). *Imparfinis usmai* is sympatric with *I. nemacheir* in the río Magdalena.

Etymology. Dedicated to Saulo Usma for his contributions to the ichthyological collection building in the Cauca valley, and for promoting an active interchange between Colombian and Venezuelan ichthyologists, since his MSc studies in 2000 at Universidad Nacional Experimental de los Llanos Ezequiel Zamora (Guanare, Venezuela).

Remarks. Proper taxonomic recognition of *Imparfinis usmai* has an especially confusing record in the ichthyological literature, even in strictly taxonomic works. Eigenmann (1922), while redescribed *Imparfinis nemacheir*, listed a series of specimens coming from the ríos Patía and Cauca, as reference material for this species. Some of these specimens (FMNH 58129, 58131-32), formerly catalogued at the Carnegie Museum, were reexamined, and we found that these population samples are assignable to *I. usmai*. This species has also been misidentified as *I. nemacheir* in Ortega-Lara *et al*. (2000) (photograph on p. 41, where the scarcely projected first dorsal-fin ray beyond fin membrane and shorter maxillary barbel are evident when compared to the actual *I. nemacheir*), and in Maldonado-Ocampo *et al*. (2005) (illustration of Fig. 154, p. 289, showing the characteristic configuration of the caudal fin of *I. usmai*, with upper lobe longer and pointed and lower lobe rounded; along with most of the reference material therein listed and reidentified in the present work: see CZUT-IC and IMCN lots of paratypes and non-type material of *I. usmai*). Even more surprising are the identifications of pictured specimens of *I. usmai* as *Rhamdia sebae* (Cuvier, 1829) (photograph in p. 70) in Galvis *et al*. (1997), and as *Cetopsorhamdia nasus* Eigenmann & Fisher, 1916 (Fig. 2, p. 128) in Ruiz-C. & Román-Valencia (2006). From our revision we can assume that some of the distribution records attributed to *Imparfinis nemacheir* in ríos Magdalena and Cauca basins, in fact correspond to *Imparfinis usmai*. This last species (Fig. 5a) being easily differentiated from the sympatric *I. nemacheir* (Fig. 5b-d) by a series of apparent external features briefly mentioned above, as well as those provided in the identification key, which are exhaustively compared in *I. usmai* diagnosis.

Those lots listed as non-type material correspond to very old specimens (collection dates: 1912-1913), that do not exhibit all diagnostic characters for the species in every single individual, perfectly understandable given the long history of preservation and manipulation (*e.g.* broken fins); or more recently collected specimens that are not ideally preserved, with distorted body, broken barbels or fins.

Discussion

Imparfinis nemacheir was described from the upper río Magdalena basin, and a single type was designated (Fig. 5b), although several specimens were available to the authors, as inferred from ranges of variation in some meristic and morphometric characters and differences in color pattern, indicated in the original description (Eigenmann, 1916). Later, Eigenmann (1922) redescribed the species in more detail, offering illustrations of the holotype (Fig. 5c), and designated three paratypes (CM 7126a; IUM 13547 a-b). In addition, he listed a series of specimens from other than the type locality of the río Magdalena (Girardot): Patía (río Telembí), Atrato (Certeguí) and Cauca (Cali), hence expanding the known distribution of the species. As we commented before (see *I. usmai* remarks), those Patía and Cauca records belong to *I. usmai*, whereas the Atrato specimens (FMNH 58130) were in effect identified as *I. nemacheir*, corroborating the presence of the species in that basin. Schultz (1944) reported *I. nemacheir* from the Lago de Maracaibo basin in Venezuela, and pointed out some disagreement between Maracaibo specimens (Fig. 5d) and Eigenmann's descriptions of *Nannorhamdia nemacheir* (=*I. nemacheir*), suggesting that a new subspecific name could be applied. However, he did not mention which characters were different, and our own direct comparisons with the holotype and one paratype (FMNH 58128) of *I. nemacheir*, did not reveal any difference in the characters evaluated (general appearance, body proportions, meristics, pigmentation pattern, and osteological features discernible from standard x-ray images), being Maracaibo specimens perfectly referable to *I. nemacheir*. A major insight on the distribution of *I. nemacheir* in Colombia was provided by Dahl (1971), in his study of the fishes of northern Colombia, assigning a wide distribution in most of the Magdalena system (including upper Cauca), except río San Jorge (a lower basin tributary), and a significant expansion to the known distribution of the species is accounted by incorporating the río Manso, a tributary of the Sinú system, which drains directly into the Caribbean Sea. Despite of not presenting a list of examined specimens, this work has become a main reference on the geographic distribution of *I. nemacheir* in Colombia, and has been followed by subsequent authors, as Galvis *et al*. (1997), who first reported the species for a Colombian side tributary of Lago de Maracaibo basin (río Catatumbo), including also the río San Juan basin and río Cesar (Magdalena basin). Galvis *et al*. (1997) neither provided a list of examined material deposited in museums, so a confident verification of these distribution records, based on a taxonomic reevaluation of the same material is impossible. Nonetheless an exhaustive examination of available specimens of *Imparfinis* in the studied ichthyological collections, and specially IAvH-P and ICN-MHN, which are the only institutions in Colombia that still keep the extant collections made by George Dahl, open a question on the presence of *I. nemacheir* in the río Cauca basin, because efforts to locate specimens of this species from that river were unsuccessful. In fact, except for five specimens from the Atrato basin (IAvH-P 6604, 10697), we failed to obtain

any additional material of the species from other Colombian drainages, even thought field work oriented to capture topotype specimens was recently conducted by AOL (ACSI funded project in 2006). On the other hand, according to the ICN-MHN database, there is a single record of *I. nemacheir* from the río Sinú (ICN-MHN 6913), but this lot is apparently missing, and corroboration of its identification, and so its presence in the Sinú is pending until this or other samples become available. Regarding its supposed presence in the río San Juan basin and río Cesar, all examined samples from the San Juan exclusively correspond to *I. spurrellii* (Fig. 5e) and no *Imparfinis* records were found from the last river. This paucity of Colombian material of *I. nemacheir* highly contrasts with the fairly abundant records from the Lago de Maracaibo basin in Venezuela. Ortega Lara *et al.* (2000) provided a detailed list of rivers where the species is found in the Cauca valley: Cauca, Jamundí, Mediacanoa, Desbaratado, Bugalagrande, Timba, Catarina, Chanco, and Pijao; however as was indicated in the section remarks of *I. usmai*, most of these records (*e.g.* río Chanco) correspond to *I. usmai*. A more recent study, centered on the fishes of Colombian Andes by Maldonado-Ocampo *et al.* (2005), listed all main basins and rivers of Colombia, already mentioned above, for the distribution of *I. nemacheir*, differing from the previous authors by offering a list of lots deposited in Colombian collections, and a distribution map (map 156, p. 339), based on plotted localities of a list of bibliographic references. However, examination of available lots there listed confirmed that these records belong to *I. usmai*, so a conservative approach would be that the only certain plotted locality for *I. nemacheir* is that representing its type locality. Posterior works having a more restricted geographic coverage in Colombia, many of them just consisting in regional lists by drainage, and providing several voucher lots, have been consistent in placing *I. nemacheir* in trans-Andean drainages: Atrato basin (Maldonado-Ocampo *et al*., 2006b), upper Cauca basin (Ortega-Lara *et al*., 2006), upper Magdalena basin (Villa-Navarro *et al*., 2006), and middle Magdalena basin (Mojica *et al*., 2006), being the presence of *I. nemacheir* corroborated by us only for Atrato and upper Magdalena basins. Also, in taxonomic works where specimens of *I. nemacheir* have been examined and included in the revised material (Bussing, 1970; Mees & Cala, 1989), those originate from the trans-Andean systems of the Atrato and Lago de Maracaibo, also in agreement with our findings.

Contrary to what is indicated in the pertinent literature, Bockmann & Guazelli (2003) omitted from the distribution of *Imparfinis nemacheir*, all trans-Andean drainages of Colombia, including the Magdalena basin (type locality), and added the upper rios Amazon, and Orinoco basins. The occurrence of *I. nemacheir* in any of these cis-Andean drainages is doubtful as shown in the most recent ichthyological surveys conducted in the Orinoco basin (Mojica, 1999; Lasso *et al*., 2004, 2005; Maldonado-Ocampo *et al*., 2006a; Galvis *et al*., 2007a), and Colombian Amazon (Mojica, 1999; Mojica *et al*., 2005; Bogotá-Gregory & Maldonado-Ocampo, 2006; Galvis *et al*., 2006; Ortega *et al*., 2006; Galvis *et al*., 2007b), where this species has not been reported. Lasso *et al*. (2004) listed *I. nemacheir* only from the Lago de Maracaibo basin in Venezuela, and Milani (2005), in a taxonomic revision of *Imparfinis* from Venezuela, determined this species to be restricted to the Lago de Maracaibo basin, whereas seven other species were reported from the Orinoco basin: *I. pristos*, *I. pseudonemacheir*, and at least five other species presumably undescribed. *Imparfinis pseudonemacheir* (Fig. 5f) is the only species in the Orinoco that could be confused with *I. nemacheir*, although they are easily differentiated by the conspicuous blotched coloration pattern, smaller size, longer maxillary barbels and symmetrical caudal-fin lobes of *I. pseudonemacheir*. Our own examination of Colombian ichthyological collections corroborates the absence of *I. nemacheir* records in the Colombian Amazon and Orinoco, and consequently, we restrict the distribution of this species to the trans-Andean drainages of Atrato, Magdalena and Lago de Maracaibo. Similarly, other widespread heptapterid species, *Rhamdia quelen* (Quoy & Gaimard, 1824), with a putative cis/trans-Andean presence (Silfvergrip, 1996), has shown to be restricted to cis-Andean South America (Perdices *et al.,* 2002), and other pimelodoid species of the río Magdalena basin, considered to be previously described species of cis-Andean drainages, were recently recognized as different species, restricted to trans-Andean drainages: *Sorubim cuspicaudus* Littmann, Burr & Nass, 2000; *Pseudoplatystoma magdaleniatum* Buitrago-Suárez & Burr, 2007. Thus, the geographic distribution verified for *I. nemacheir*, along with that found for *I. timana* and *I. usmai*, further corroborates the endemic nature of the trans-Andean fauna, and add to the growing evidence (*e.g.* Vari *et al*., 2005) for this biogeographic pattern of the primary freshwater fishes in South America.

Key to the trans-Andean and Central-American species of *Imparfinis*

1. Maxillary barbels reaching to or exceeding pelvic-fin origin 2
1'. Maxillary barbels not reaching pelvic-fin origin 4
2. First ray of dorsal fin longer than second ray; maxillary barbel surpassing pelvic-fin base 3
2'. First ray of dorsal fin shorter than second ray; maxillary barbel reaching pelvic-fin origin (reaching anal-fin origin in some juvenile specimens) ..... *I. timana* (Figs. 1, 5g; río Guarapas, upper río Magdalena basin)
3. First ray of dorsal fin projecting beyond fin margin as a long filament (length of first dorsal-fin ray: 29.2-33.1% in SL); pectoral fin surpassing pelvic-fin origin; lower caudal-fin lobe pointed, with lower branch of lowermost branched ray longer than upper branch, and extended as a filament ..... *I. nemacheir* (Figs. 5b-d; río Atrato, río Magdalena and lago de Maracaibo basins)
3'. First ray of dorsal fin not projected as a long filament (length of first dorsal-fin ray: 19.1-23.2% in SL); pectoral fin not reaching pelvic-fin origin; lower caudal-fin lobe rounded in specimens longer than 30 mm SL, with both branches of lowermost branched ray approximately equal in length ..... *I. usmai* (Figs. 3, 4, 5a; río Patía, río Cauca and río Magdalena basins)

4. Maxillary barbel extending to half the length of pectoral fin, adipose-fin length: 17.2-18.6% in SL ..... *I. lineatus* (Fig. 5h; streams in Pacific versant of northern Costa Rica)
4'. Maxillary barbel extending to end of pectoral fin, adipose-fin length: 21.1-22.9% in SL ..... *I. spurrellii* (Fig. 5e; río San Juan basin)

Comparative material. *Imparfinis cochabambae*: **Bolivia:** ANSP 69066, holotype of *Pimelodella cochabambae* Fowler, 1940, 59.1 mm SL, mouth of río Chapare in río Chimore. *Imparfinis lineatus*: **Costa Rica:** Puntarenas: ANSP 114839, paratypes of *Nannorhamdia lineata* Bussing, 1970, 2, 54.4-63.7 mm SL, quebrada 36, 12 km W of pueblo Río Claro, at Interamerican Highway, 80 m asl. MBUCV-V-32675, 4, 39.9-69.4 mm SL (1 CS, 64.5 mm SL), río Peje, 13 km S of San Isidro General. **Panama:** Chiriqui: ANSP 151053, 1, 51.2 mm SL, outlet stream of balneario Las Fuentes, Volcan. *Imparfinis microps*: **Colombia:** río Orinoco basin: Departamento del Meta: MPUJ 2952, 2, 34.6-37.5 mm SL (1 CS, 34.6 mm SL), Municipio San Martín, vereda Monte Bello, río Camoa. *Imparfinis nemacheir*: **Colombia:** río Atrato basin: Departamento del Chocó: FMNH 58130, 4, 32.1-47.1 mm SL, río Quito, at Certegui, upper basin tributary of río Atrato. IAvH-P 6604, 3, 51.9-62.9 mm SL (1 CS, 62.9 mm SL), Municipio de Yuto, río Atrato, 05º32'55"N 76º38'06"W. IAvH-P 10697, 1, 69.0 mm SL, out of IAvH-P 6604. Río Magdalena basin: Departamento de Cundinamarca: FMNH 58128, paratype of *Nannorhamdia nemacheir* Eigenmann & Fisher, 1916, 1, 78.0 mm SL, Girardot. **Venezuela:** Lago de Maracaibo basin: Mérida: MBUCV-V-9200, 4, 57.6-79.6 mm SL (1 CS, 79.6 mm SL), Municipio Pedraza, caño Perdido. MBUCV-V-9215, 4, 59.4-80.9 mm SL (3 CS, 75.2-80.9 mm SL), same data as MBUCV-V-9200. MCNG 33610, 15, 38.4-55.0 mm SL, Municipio Pedraza, caño Rico, at the bridge**.** Mérida-Táchira border: MCNG 24831, 1, 74.5 mm SL, río Escalante, at the bridge N° 1, 08°31'N 71°47'W. Táchira: MCNG 24850, 4, 32.1-38.3 mm SL, río Calichito, 2 km E of Caño Hondo, between La Fría y La Honda. Trujillo: MHNLS 15453, 5, 40.8-81.4 mm SL, río Pocó, 09º16'35"N 70º54'23"W, 285 m asl. Zulia: MBUCV-V-23844, 1, 67.2 mm SL, río Lajas, tributary of río Palmar, in Hacienda Los Totumos, Matera Los Totumos, Sierra de Perijá. MCNG 24992, 9, 28.7-49.7 mm SL, río Negro, 12 km S of Machiques, at the bridge of the road to Tokuko. MCNG 25007, 8, 28.5-41.2 mm SL, río Yasa, 5 km S of Machiques, at the bridge. MCNG 33593, 18, 36.3-66.7 mm SL, Municipio Jesús María Semprún, río de Oro, near of Fundo Santa Fe. MCNG 33594, 8, 44.5-70.0 mm SL, río Guasare, in Hacienda Pamplona, Goajira. MCNG 33608, 3, 52.4-65.7 mm SL, caño La Raya. *Imparfinis pristos*: río Orinoco basin: **Colombia:** Departamento del Vichada: ICN-MHN 2460, topotypes, 3, 25.2-32.1 mm SL, río Tomo. **Venezuela:** Amazonas: MBUCV-V-25514, 29, 19.0-26.6 mm SL, río Ventuari. Apure: MBUCV-V-4731, 6, 22.9-30.1 mm SL, caño La Pica, tributary of río Capanaparo, where crossed by the road between San Fernando de Apure and Puerto Páez. Bolívar: MBUCV-V-11503, 3, 19.7-21.8 mm SL, río Parguaza, 5 km from its mouth. *Imparfinis pseudonemacheir*: **Venezuela:** río Orinoco basin: Anzoátegui: MBUCV-V-28168, 30, 25.6-37.5 mm SL, morichal tributary of río Moquete, 10 km W of Paso Bajito, in El Corozo road. MBUCV-V-28656, 24, 21.6-48.1 mm SL, río Atapirire, where crossed by the road between Manasma and Atipirire. *Imparfinis spurrellii*: **Colombia:** río San Juan basin: Departamento del Chocó: FMNH 58125, 1, 59.8 mm SL, río San Juan at Istmina. ICN-MHN 5532, 11, 51.9-82.0 mm SL (2 CS, 51.9-65.3 mm SL), río San Juan. ICN-MHN 5533, 9, 62.7-82.6 mm SL (1 CS, 69.0 mm SL), río San Juan at Santa Cecilia. ICN-MHN 5536, 3, 64.0-83.7 mm SL (1 CS, 80.5 mm SL), río San Juan at Istmina. ICN-MHN 5537, 8, 53.0-79.6 mm SL (5 CS, 53.0-73.1 mm SL), río San Juan. *Imparfinis stictonotus*: **Bolivia:** ANSP 68892, holotype of *Nannorhamdia stictonotus* Fowler, 1940, 37.6 mm SL, río Chapare, Todos Santos. ANSP 68893, paratypes of *Nannorhamdia stictonotus* Fowler, 1940, 15, 32.5-39.7 mm SL, collected with the holotype. ANSP 68908, paratypes of *Nannorhamdia stictonotus* Fowler, 1940, 3, 32.8-39.1 mm SL, mouth of río Chapare in río Chimore. *Imparfinis* spp. **Panama:** Chiriqui: ANSP 146765, 1, 24.9 mm SL, stream and swamp, 36.6 km from río Sereno on río Sereno-Canoas road. **Venezuela:** río Orinoco basin: Barinas: MBUCV-V-9932, 2, 49.1-56.6 mm SL, río Masparro, at the bridge of the road between Boconoito and Barrancas. MBUCV-V-12904, 1, 112.5 mm SL, río La Yuca, tributary of río Masparro, at the bridge, km 344, 08º44'N 70º10'W. MBUCV-V-12912, 3, 57.0-60.3 mm SL, same data as MBUCV-V-12904. *Pimelodella macrocephala*: **Colombia:** río Cauca basin: Departamento del Valle del Cauca: MCZ 35876, paratypes of *Nannorhamdia macrocephala* Miles, 1943, 2, 22.0-25.9 mm SL, río Cauca at Inanchito, near Cali.

Acknowledgements

The All Catfish Species Inventory Project (NSF DEB-0315963), a five year grant supported by the US National Science Foundation, funded this work through research grants to AOL and JAMO. Additional financial support for field work was provided by Programa de Inventarios of Instituto Alexander von Humboldt; WWF Colombia; Comité Central de Investigaciones of Universidad del Tolima; Laboratorio de Ictiología of Universidad de Antioquia and Instituto para la Investigación y la Preservación del Patrimonio Cultural y Natural del Valle del Cauca - INCIVA. CD received a Visitor Scholarship Grant from FMNH and a Böhlke Memorial Endowment Fund from ANSP to visit ichthyological collections of each respective institution. JAMO is grateful to TWAS-CNPq Postgraduate Fellowships program for support during this project. We thank the following individuals and institutions for hospitality during visits, loans of specimens and other assistance: J. Lundberg, M. Sabaj-Pérez and K. Luckenbill (ANSP), K. Swagel, M. A. Rogers, P. Willink and M. Littmann (FMNH); J. Bogotá-Gregory (IAvH); J. Mojica, G. Galvis and M. Arce (ICN-MHN); F. Provenzano (MBUCV); D. Taphorn and O. Castillo (MCNG); K. Hartel (MCZ); C. Lasso, O. Lasso-Alcalá, K. González and J. Hernández-Acevedo (MHNLS). M. Littmann and the Division of Fishes of FMNH kindly allowed the reproduction of the photograph of the holotype of *Nannorhamdia nemacheir*, available at All Catfish Species Inventory Image Base website (http://acsi.acnatsci.org/base/index.html). M. Littmann and F. Provenzano critically read a draft of the manuscript and offered valuable suggestions. M. Quiroga-Carmona kindly helped us with the translation from the German of the original description of *Imparfinis hasemani*. Finally we want to recognize the invaluable contribution of the Biodiversity Heritage Library (http://www.biodiversitylibrary.org/), for making freely available the universal knowledge of biodiversity, allowing us to have direct access to all original descriptions reviewed, dating from late nineteenth and first half of twentieth century's.

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Submitted August 3, 2010
Accepted October 10, 2011
Published December 26, 2011