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Authors: Munroe, Thomas A., and Kong, Xiao-Yu

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**Resolving uncertainties regarding the nomenclature and status of the
Tongue Soles, *Paraplagusia dollfusi* Chabanaud, 1931 and
“*Cynoglossus (Trulla) dollfusi* (Chabanaud, 1937)”
(Teleostei: Pleuronectiformes: Cynoglossidae)**

Thomas A. Munroe¹ and Xiao-Yu Kong²

(TAM) National Systematics Laboratory, NMFS/NOAA, National Museum of Natural History,
PO Box 37012, NHB, MRC-153, Smithsonian Institution, Washington, DC, USA 20013–7012
U.S.A., e-mail: munroet@si.edu

(XYK) Key Laboratory of Marine Bio-Resources Sustainable Utilization, South China Sea
Institute of Oceanology, Chinese Academy of Sciences, Guangzhou 510301, China,
e-mail: xykong@scsio.ac.cn

Abstract.—Considerable confusion surrounds the nomenclature and taxonomic status of the tongue sole, *Paraplagusia dollfusi* Chabanaud, 1931 (Cynoglossidae, Cynoglossinae), described from a single specimen captured in the Gulf of Suez, Red Sea, and *Cynoglossus (Trulla) dollfusi* Chabanaud, a name used by Gruvel and Chabanaud in 1937 for another specimen of tongue sole taken in the Suez Canal, Red Sea. Since publication, subsequent authors have considered there to be either one or two nominal species represented by these names, and authors have disagreed as to what genus (*Paraplagusia*, *Cynoglossus*, or both) nominal species associated with these names should be assigned. Both specimens have been reported as lost since at least the 1970s rendering it impossible to directly examine them to help resolve issues concerning their identities. We retrace historical literature involving these names and comment on reasons for the confusion experienced by previous authors. Our results, supported by irrefutable evidence gleaned from three different papers authored by Paul Chabanaud between 1931 and 1947, support the conclusion that only one valid nominal species is involved with these two names and the appropriate name for this taxon is *Cynoglossus dollfusi* (Chabanaud, 1931). Although never explicitly stated, nor indicated by use of appropriate punctuation in the descriptive account of the tongue sole specimen in the 1937 publication, we demonstrate that Gruvel and Chabanaud did not propose a new name when using the trinomial, *Cynoglossus (Trulla) dollfusi*, for this specimen. Rather, based on evidence uncovered in our investigation, as well as that appearing in a previously overlooked publication by Chabanaud in 1947, *Cynoglossus (Trulla) dollfusi* represents a new combination proposed by Gruvel and Chabanaud to reflect transfer of the nominal species, *dollfusi*, from *Paraplagusia* to *Cynoglossus*. Evidence is also provided to support the hypothesis, as has been suggested by previous authors, that appropriate generic assignment of Chabanaud’s nominal species, *dollfusi*, is *Cynoglossus*, and not *Paraplagusia*.

Keywords: Nomenclature, Tonguefish, Red Sea, Flatfish, *Cynoglossus*, *Paraplagusia*, Fringe-lip tongue soles, *Cynoglossus cleopatridis*

Corresponding author: Thomas A. Munroe
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Over a career spanning some 34 years, Paul Chabanaud, who conducted his research at the Museum National d'Histoire Naturelle (MNHN), authored over 165 works on flatfishes (Pleuronectiformes) including papers on anatomy, nomenclature, taxonomy and classification of a wide variety of species, genera and families in this Order (Dollfus 1960, Chanet & Desoutter-Méniger 2008). This proliferation of papers along with his considerable experience and knowledge concerning the taxonomy and systematics of flatfishes ranked Chabanaud during his lifetime among the foremost authorities publishing on this group of fishes. Over his career, Chabanaud wrote several papers concerning the taxonomy, nomenclature and systematics of species in the family Cynoglossidae (see bibliography in Chanet & Desoutter-Méniger 2008), flatfishes commonly referred to as tongue soles or tonguefishes. Despite his extensive experience and numerous publications on flatfishes, Chabanaud made some "interesting" decisions in some of his works regarding flatfish species and genera he studied. Some of these unorthodox decisions were further compounded by the loss of primary types for the nominal species involved, while for others, some of the original confusion has been reinforced by mistakes of subsequent authors working with these names and nominal species. Consequently, confusion regarding nomenclature or status of some nominal species described by Chabanaud continues even to the present, and this unfortunate circumstance continues to stymie authors dealing with these species.

One case exemplifying such confusion concerns the nomenclature, authorship and status of two names used for tongue soles collected in the Red Sea: *Paraplagusia dollfusi* Chabanaud, 1931, a species of tongue sole described by Chabanaud from one specimen collected in the Gulf of Suez, and *Cynoglossus (Trulla) dollfusi*, a name

used by Gruvel & Chabanaud (1937) accompanying their descriptive account of another specimen of tongue sole collected in the Suez Canal. In the 1931 study, Chabanaud clearly described a new species of cynoglossid tongue sole, *Paraplagusia dollfusi*, named in honor of M. R. Ph. Dollfus and based on a specimen collected by Dollfus on 8-12-1928 at Station XI, located in the Gulf of Suez. In his study, Chabanaud (1931) referred to this specimen as the "Type" of his nominal species, but provided no catalogue number, illustration, or photograph of the specimen. The unique holotype of *Paraplagusia dollfusi* has long been considered lost (Menon 1977, Dor 1984, Desoutter et al. 2001, Eschmeyer & Fricke 2016).

In the 1937 study, Gruvel & Chabanaud (1937:8) included a descriptive account of a single specimen of tongue sole captured in the Suez Canal using the name, *Cynoglossus (Trulla) dollfusi* Chabanaud. The brief description of the specimen includes some meristic features, which are similar, but slightly different, from those of the specimen detailed in Chabanaud (1931), and some comments on the pigmentation of this specimen. Gruvel and Chabanaud included a black and white illustration of the specimen, as well as three illustrations representing typical scales from the ocular and blind sides of the body, and an additional figure of a lateral-line scale. This specimen has also been reported to be lost (Menon 1977, Dor 1984, Desoutter et al. 2001, Eschmeyer & Fricke 2016).

Of all the authors that have included these names in their publications, only Chabanaud and perhaps, Gruvel, have actually dealt with the specimens that were the basis for descriptive accounts in Chabanaud (1931) and Gruvel & Chabanaud (1937). All others have relied on information published in these two works to derive their conclusions as to how many species were involved with these names, and to what genus should the nominal species be assigned. This situation has

resulted in considerable confusion among subsequent authors dealing with these names. For example, Fowler (1956), Menon (1977), Dor (1984), Desoutter et al. (2001) and Eschmeyer & Fricke (2016) differ in their conclusions regarding how many nominal species are involved with these names and also differ on the generic assignment for nominal species represented by these names. Subsequent authors have also incorrectly attributed authorship of both names to Chabanaud even though these names appear in separate papers authored by Chabanaud (1931) or co-authored by Gruvel & Chabanaud (1937). Although Desoutter et al. (2001) expressed some uncertainty as to how many species were represented by the names appearing in these two works, they thought it most likely that two nominal species were represented, *Paraplagusia dollfusi* Chabanaud, 1931 and '*Cynoglossus dollfusi* Chabanaud, in Gruvel and Chabanaud, 1937.' Since Chabanaud described three non-flatfish species in three different genera using the patronym, *dollfusi* (see Eschmeyer & Fricke 2016), it is not inconceivable that he also could have used this patronym to name species in two different genera of flatfishes.

Based on the most recent information summarized in the online version of the *Catalogue of Fishes* (Eschmeyer & Fricke 2016), both *Paraplagusia dollfusi* Chabanaud, 1931 and '*Cynoglossus (Trulla) dollfusi* Chabanaud, in Gruvel and Chabanaud, 1937' are treated as possible names for different nominal species. However, Eschmeyer & Fricke (2016) emphasize that considerable confusion persists among authors regarding whether these two names represent only one, or are names for two, species. For example, Eschmeyer and Fricke note that some authors (i.e., Menon 1977) concluded that only one species was discussed in the two Chabanaud studies, while others (Fowler 1956, Dor 1984, Desoutter et al. 2001) surmised that two nominal species of

cynoglossid tongue soles were represented in the studies of Chabanaud (1931) and Gruvel & Chabanaud (1937). Eschmeyer & Fricke (2016) further remarked that persistent questions remain concerning proper generic assignment (either *Paraplagusia* or *Cynoglossus*, or both) of nominal species appearing in these Chabanaud studies. And, they also reiterated the comment by Desoutter et al. (2001) that if both nominal species were assigned to *Cynoglossus*, then these two names would become objective homonyms, and one ('*Cynoglossus dollfusi* Chabanaud, 1937') would need to be replaced.

Recently, we (Munroe & Kong, unpubl. data) evaluated the taxonomic status of numerous nominal species of cynoglossid tonguefishes, including that of *Paraplagusia dollfusi* Chabanaud, 1931. Evaluating the status of this nominal species also required an assessment of the status of the trinomial, *Cynoglossus (Trulla) dollfusi* Chabanaud appearing in Gruvel & Chabanaud (1937). Our interpretation of information contained within publications where these names appear retraces and explains the historical confusion regarding the status of the names appearing in Chabanaud (1931) and Gruvel & Chabanaud (1937). We also found a paper by Chabanaud (1947) that had been overlooked by earlier authors working with these names, which provides critical information necessary to resolve with certainty the confusion surrounding these two names. Results of our investigation resolve questions regarding the authorship and status of these two names and also answer the question of how many nominal species are involved with these names. Sufficient evidence was also uncovered during our research to confidently identify the appropriate generic assignment for the nominal species associated with these names. The following discussion traces historical treatments of these names and also provides the rationale for conclusions derived by us in this investigation.

Nomenclatural Review

***Paraplagusia dollfusi* Chabanaud, 1931.**—Description of *Paraplagusia dollfusi* is based on a single specimen captured in the Gulf of Suez at 28°54′–28°49′N, 32°44′–32°47′E. This specimen had a reported total length of 125 mm, and was described as having the following features: 106 dorsal-fin rays, 85 anal-fin rays, 8 caudal-fin rays, 70 lateral-line scales, with 12 scales between “the two ocular-side lateral lines,” and a single ocular-side nostril. This specimen was clearly identified as the ‘Type’ specimen in the original description (Chabanaud 1931). Unfortunately, no photograph or illustration accompanies this verbal description, nor is a museum catalogue number reported for the specimen. Menon (1977), Dor (1984), and Desoutter et al. (2001) reported that the type specimen of *Paraplagusia dollfusi* Chabanaud was lost and unavailable for examination. Attempts by Desoutter & Munroe in the 1990s to locate this specimen at the MNHN were unsuccessful. And, a recent (February 2, 2016) search of the on-line ichthyology collection database at MNHN for this specimen also failed to locate it. Thus, it is assumed that this type specimen is not extant in the Museum’s fish collection.

After Chabanaud (1931), the name, *Paraplagusia dollfusi*, does not appear as a valid name for a tongue sole in any other publication, including the world checklist of pleuronectiform fishes prepared by Chabanaud (1939), until Fowler’s (1956) work on fishes of the Red Sea and Southern Arabia. Fowler (1956:182) considered *Paraplagusia dollfusi* Chabanaud, 1931 as a valid species of the Red Sea fish fauna following the opinion of Chabanaud (1931). It does not appear from his account that Fowler ever examined the type specimen of *P. dollfusi*. Evidence to support this conclusion is based on the fact that the meristic and morphometric data included in Fowler’s descriptive account

for this nominal species are identical to those reported in the original description of the type specimen by Chabanaud (1931). And, further evidence that Fowler did not examine the type specimen of *P. dollfusi* is also provided in his phrasing “Said to differ clearly from *P. bilineata*...,” and the use of the same diagnostic characters as those in Chabanaud (1931) when distinguishing *P. dollfusi* from *P. bilineata*.

Following Fowler’s study, Menon (1977) next included this nominal species, as *Cynoglossus dollfusi* (Chabanaud), among species considered valid in his worldwide revision of the genus *Cynoglossus*. In the synonymy presented for *C. dollfusi* (Chabanaud), Menon (1977) indicated that reassignment of *Paraplagusia dollfusi* to *Cynoglossus* had already been done by Gruvel & Chabanaud (1937), but he (Menon) offered no evidence or discussion to support this conclusion, nor did he provide any information as to why he thought Gruvel & Chabanaud (1937) were warranted in conducting such an action.

Dor (1984:271), in his checklist of the fishes of the Red Sea, listed *Paraplagusia dollfusi* Chabanaud, 1931 in the synonymy constructed for *Cynoglossus dollfusi* (Chabanaud, 1931). He listed this nominal species as the senior synonym of what he concluded was a second nominal species, ‘*Cynoglossus (Trulla) Dollfusi*,’ to which he attributed authorship to Gruvel & Chabanaud, 1937. In their updated checklist of Red Sea fishes, Goren & Dor (1994:72) listed *Cynoglossus dollfusi* (Chabanaud, 1931) among nominal species they recorded from the Red Sea. They provided no synonymy to reflect their interpretation of the history of the name, but the fact that they placed Chabanaud’s name in parentheses indicates they at least recognized this nominal species had been described in a genus other than *Cynoglossus*.

Additional discussion regarding the nomenclature and status of this nominal species is presented in Desoutter et al.

(2001:349), who recognized *Paraplagusia dollfusi* Chabanaud, 1931 as a valid species, although they concluded that this nominal species did not belong in *Paraplagusia*, but rather, that it should be recognized as a member of *Cynoglossus*. However, unlike the conclusions drawn by Menon (1977), but in agreement with conclusions presented in Dor (1984), Desoutter et al. (2001) considered *Paraplagusia dollfusi* Chabanaud, 1931 to be different and distinct from ‘*C. dollfusi* Chabanaud, 1937.’ Desoutter et al. (2001) did not attempt a definitive determination regarding the systematic status of ‘*C. dollfusi* Chabanaud, 1937,’ but instead, thought it best to wait for a revision of the genus *Cynoglossus* to be conducted before making any assessment on the status of this nominal species. Desoutter et al. (2001) also pointed out that, if both *P. dollfusi* Chabanaud, 1931 and ‘*C. dollfusi* Chabanaud, 1937’ were recognized as valid species in *Cynoglossus*, then these names become objective homonyms. Because *C. dollfusi* (Chabanaud, 1931) would have priority, recognition of ‘*C. dollfusi* Chabanaud, 1937’ as a valid species would then require a replacement name to resolve this homonymy.

Eschmeyer & Fricke (2016) list *P. dollfusi* Chabanaud, 1931 as having been described from a holotype specimen that is apparently lost. They note that several authors (Menon 1977, Dor 1984, Goren & Dor 1994) considered this to be a valid species [as *C. dollfusi* (Chabanaud, 1931)]. Eschmeyer and Fricke also report that Desoutter et al. (2001) considered this nominal species as a member of *Cynoglossus*, and that they noted the status of this nominal species as uncertain.

‘*Cynoglossus (Trulla) dollfusi Chabanaud*’.—On page 8 in Gruvel & Chabanaud’s (1937) paper on the fishes of the Suez Canal, appears the name *Cynoglossus (Trulla) Dollfusi* Chabanaud followed by a numerical reference indicated as [5]. The specimen in the brief account for *Cyno-*

glossus (Trulla) dollfusi measured 133 mm TL, and was described as having the following features: with 11 scales between “the two lateral lines,” 100 dorsal-fin rays, 84 anal-fin rays and 67 lateral-line scales. A description of the coloration of this specimen is also included in this account, as well as an illustration of the specimen, which possibly indicates that it had three lateral lines. Menon (1977), Dor (1984), and Desoutter et al. (2001) have reported this specimen as lost and unavailable for examination. Attempts by Desoutter & Munroe in the 1990s to locate this specimen at the MNHN were unsuccessful. And, a recent (February 2, 2016) search of the on-line ichthyology collection database at MNHN also failed to locate this specimen. Thus, it is assumed that this specimen is no longer extant in the Museum’s fish collection.

At least two points associated with construction of the trinomial *Cynoglossus (Trulla) dollfusi* Chabanaud have likely led subsequent investigators (Fowler 1956, Dor 1984, Desoutter et al. 2001, Eschmeyer & Fricke 2016) into thinking that Chabanaud might have described a new species in this 1937 study by Gruvel and Chabanaud. The first point of confusion is the listing of the author of *Cynoglossus (Trulla) dollfusi* only as Chabanaud, without the name, Chabanaud, being enclosed in parentheses. Additionally, Gruvel and Chabanaud do not include a publication date for this trinomial. Absence of parentheses enclosing the author’s name and the lack of a publication date indicating when the species was described are likely reasons why several authors interpreted this trinomial as if it represented the name of a newly-described species. Another confusing point concerns the numerical citation indicated as [5] following the author’s (Chabanaud) name in this trinomial. According to the numerical list of references appearing in Gruvel & Chabanaud (1937), reference number 5 equals that of Chabanaud (1931). However, nowhere in that

citation does the name *Cynoglossus (Trulla) dollfusi* appear. The only tongue soles listed in this work are *Paraplagusia dollfusi* Chabanaud and *Dollfusichthys sinusarabici* Chabanaud, 1931. Since the name *Cynoglossus (Trulla) dollfusi* doesn't appear in the 1931 study, nor does it appear in any of the other Chabanaud literature cited in Gruvel & Chabanaud (1937), its occurrence in the 1937 publication represents first use of this name. Yet, no explanation is provided in Gruvel & Chabanaud's (1937) account of *Cynoglossus (Trulla) dollfusi* concerning their reasons why this particular trinomial was chosen. Nevertheless, it is clearly apparent in the account for *Cynoglossus (Trulla) dollfusi* that these authors refer to a species previously described in Chabanaud's earlier (1931) paper. But to which of the two species occurring in that paper do they refer? Gruvel & Chabanaud (1937) commented in a footnote that a color description had not been included in the original description of the species. Again, this statement doesn't clarify to which species they refer, because no color description is supplied in descriptions of either *Paraplagusia dollfusi* or *Dollfusichthys sinusarabici*.

Following the Chabanaud (1931) and Gruvel & Chabanaud (1937) studies, the name *Cynoglossus dollfusi* appears in several other studies, but authors of these subsequent works have disagreed concerning the date of publication for this name, as well as the status of the nominal species to which this name applies. For example, Chabanaud (1939) includes *Cynoglossus dollfusi* in his world checklist of valid flatfish species, but this name appears without accompanying author, date, synonymy or comment. Without these important pieces of information, it is impossible to know what nominal species, or what species concept, Chabanaud was considering when referring to this nominal species in his checklist.

In his work on fishes of the Red Sea and Southern Arabia, Fowler (1956:183) listed

the name *Trulla dollfusi*, with authorship attributed to Chabanaud, in Gruvel & Chabanaud, 1937. Fowler's generic assignment (*Trulla*) for this purported nominal species follows an earlier generic classification of tongue soles proposed by Kaup (1858), who had recognized *Trulla* as a genus distinct from *Cynoglossus*. Fowler clearly considered the descriptive account for *Cynoglossus (Trulla) dollfusi* Chabanaud appearing in Gruvel & Chabanaud (1937) to constitute description of a new species. Fowler did not have any additional specimens of this nominal species in his study. His brief re-description of what he considered to be a distinct nominal species included meristic, morphometric and color information, all of which he reports as deriving from the account and figure of Gruvel & Chabanaud (1937). Based on the two species accounts he presents, Fowler (1956) clearly regarded the name '*Trulla dollfusi* Chabanaud, in Gruvel & Chabanaud, 1937' to be that of a valid species, distinct from *Paraplagusia dollfusi* Chabanaud, 1931.

In the synonymy for *Cynoglossus dollfusi* (Chabanaud) presented in Menon's (1977) revision of the genus *Cynoglossus*, he treated the name *Cynoglossus dollfusi* (Chabanaud) as a combination reflecting re-assignment of *P. dollfusi* Chabanaud, 1931 to *Cynoglossus*. He attributed this transfer to Gruvel & Chabanaud (1937), but provided no further comment on why he concluded that the trinomial in Gruvel and Chabanaud represented a new combination. Nor did he provide any reasons on why he thought this action was necessary, or why he (Menon) accepted this transfer. In the species account for *C. dollfusi* (Chabanaud), Menon's discussion of the historical literature for this species is replete with mistakes and misinterpretations. For example, he incorrectly reported the type locality of *P. dollfusi* Chabanaud, 1931 as the Suez Canal, when actually the type locality of this nominal species is the Gulf of Suez. Menon also incorrectly listed

the holotype as being only 33.0 mm TL (likely a typographical error; see below), when actually Chabanaud (1931) reported the total length of the type as 125 mm. It was the second (non-type) specimen of the species discussed in Gruvel & Chabanaud (1937) that had a reported TL of 133.0 mm. Furthermore, Menon incorrectly remarked in the synonymy section of his paper that Chabanaud described the species as having three ocular-side lateral lines. Chabanaud (1931) never actually mentioned the total number of lateral lines for the specimen upon which his description of *Paraplagusia dollfusi* was based. Gruvel & Chabanaud (1937) included an illustration of the second specimen identified as this species, which suggests that this specimen had three ocular-side lateral lines (but the drawing is of such poor quality that the lines may not represent lateral lines). Menon also incorrectly stated that Gruvel and Chabanaud redescribed the species based on the same specimen appearing in Chabanaud (1931). Actually, Gruvel & Chabanaud (1937) discussed a second specimen in their paper, not the holotype that was the basis for the species description in Chabanaud (1931).

Also apparent from the synonymy section of Menon's paper is that, when discussing historical information about this nominal species, he based the majority of his conclusions about the nomenclatural history and status on information from the descriptive account of the second specimen reported by Gruvel & Chabanaud (1937). He (Menon) largely, and inexplicably, ignored information contained in the original description of the holotype presented in Chabanaud (1931).

Menon further compounded the confusion surrounding the nominal species *C. dollfusi* (Chabanaud) when he concluded that *Cynoglossus cleopatridis* Chabanaud, 1949, another nominal species from the Red Sea, was a junior subjective synonym of the former species and then proceeded to base his re-description of *C. dollfusi*

only on information from the holotype (a damaged, incomplete specimen; see Chabanaud 1949) of that nominal species. This re-description based only on the holotype of *C. cleopatridis* is incorrect as these two nominal species are different and should not be considered conspecifics (Munroe, in prep.). In re-describing *C. dollfusi* (Chabanaud) based only on the holotype of *C. cleopatridis*, Menon, therefore, changed the concept of the nominal species *C. dollfusi* from that originally described by Chabanaud (1931) and later discussed in Gruvel & Chabanaud (1937). Consequences of this action are discussed in more detail in another work (Munroe, in prep.).

Since Menon's study (1977), the name *Cynoglossus dollfusi* appears in several checklists of fishes of the Red Sea, including those by Dor (1984), Goren & Dor (1994) and Golani & Bogorodsky (2010). All of these authors considered *Cynoglossus dollfusi* to be a name for a valid species of tongue sole from the Red Sea described by Chabanaud. However, these studies differ in two important aspects: the year of authorship of the name and the species concept they recognize for the nominal species described by Chabanaud. For example, Dor's (1984) interpretation of previously published literature was that two nominal species were involved: *Paraplagusia dollfusi* Chabanaud, 1931 and '*Cynoglossus (Trulla) dollfusi* Gruvel & Chabanaud, 1937,' which is listed as if it were a second, described species. Based on the punctuation presented in his synonymy of *Cynoglossus dollfusi* (Chabanaud, 1931), and the statement that no type material is available for '*Cynoglossus (Trulla) Dollfusi*,' Dor (1984) apparently concluded that a second tongue sole species had been described in Gruvel & Chabanaud's 1937 paper. Also apparent from the synonymy presented is that Dor (1984) regarded these two nominal species as conspecific, because he listed the valid name and authorship for the species as *Cynoglossus dollfusi* (Chabanaud, 1931). Goren & Dor (1994) and

Golani & Bogorodsky (2010) also considered *Cynoglossus dollfusi* (Chabanaud, 1931) among valid species occurring in their checklists of fishes of the Red Sea. No reference was made in either of these checklists to recognize *Paraplagusia dollfusi* Chabanaud 1931 as a species distinct from *Cynoglossus dollfusi* (Chabanaud, 1931).

Desoutter et al. (2001) discussed some of the issues surrounding the nomenclatural status of '*Cynoglossus (Trulla) dollfusi*' in their type catalogue of flatfishes in the MNHN. They considered '*Cynoglossus (Trulla) dollfusi*' as a valid species described by Chabanaud, in Gruvel & Chabanaud (1937). They also treated this nominal species as distinct from *Paraplagusia dollfusi* Chabanaud, 1931, but offered no argument or evidence to support their reasons for deriving such a conclusion.

The most recent comments on the status of the name *Cynoglossus (Trulla) dollfusi* are those appearing in the online version of the *Catalogue of Fishes*. Here, Eschmeyer & Fricke (2016) list '*Cynoglossus (Trulla) dollfusi*' as a nominal species attributable to Chabanaud, in Gruvel & Chabanaud, 1937. Eschmeyer and Fricke's account for this purported nominal species erroneously reports two syntypes curated in the MNHN fish collection that are now lost. Eschmeyer and Fricke further note that Desoutter et al. (2001) regarded this nominal species to be independent of *Paraplagusia dollfusi* Chabanaud, 1931, and one whose status was uncertain. Eschmeyer and Fricke reiterate that Desoutter et al. (2001) regarded the nominal species, '*Cynoglossus (Trulla) dollfusi*', as subjectively invalid as it is secondarily preoccupied in *Cynoglossus* by *Paraplagusia dollfusi* Chabanaud, 1931.

Discussion

Given the long, confused history surrounding the names, *Paraplagusia dollfusi*

Chabanaud, 1931 and '*Cynoglossus (Trulla) dollfusi* Chabanaud, 1937,' the first important questions to be answered are whether or not one or two nominal species were described in the Chabanaud (1931) and Gruvel & Chabanaud (1937) papers, and, if more than one species had been described in these works, what is the authorship for these names. Following resolution of these questions, the next step is to determine the status of nominal species and to determine the appropriate generic placement for the nominal species involved with these names. Without the ability to examine the actual specimens upon which the original description of *Paraplagusia dollfusi* Chabanaud, 1931 and the account of *Cynoglossus (Trulla) dollfusi* appearing in Gruvel & Chabanaud (1937) were based, we have had to rely on information appearing in historical literature to resolve these questions. Our decisions are discussed below.

We disagree with the interpretation that two species are involved with the names, *Paraplagusia dollfusi* and *Cynoglossus (Trulla) dollfusi*, based on several lines of evidence. Unlike the Chabanaud (1931) study, conspicuously absent in the account of Gruvel & Chabanaud (1937) is any specific indication (i.e., *species novum*, new species, n. sp., etc.) or discussion by these authors that they were describing a new species when using the trinomial *Cynoglossus (Trulla) dollfusi*. (Unfortunately, we can't state with certainty that these authors would have used such indications to designate description of a new species as no new species were present among the other 120 species listed in Gruvel and Chabanaud). Nor do these authors mention designating a type specimen, as had been done earlier in Chabanaud (1931). Either of these actions would have clearly indicated that Gruvel and Chabanaud were describing a new species in their work.

Further supporting evidence that no new species was described appears in

Gruvel and Chabanaud's comment appearing in a footnote to their descriptive account of their specimen in which they mentioned that coloration had not been included in the original description of the species. This statement indicates that they concluded their specimen belonged to a species that had been described previously. And finally, Gruvel & Chabanaud (1937) also pointed out that the species (*Cynoglossus (Trulla) dollfusi*) to which they assigned their specimen had originally been described from a specimen collected in the Gulf of Suez, whereas capture location of their specimen was near the entrance to the Suez Canal, a capture location they emphasized was the first recorded occurrence for the species in that region (and not the first recorded occurrence of the species).

The appearance of the numerical reference following the author's name in the trinomial *Cynoglossus (Trulla) dollfusi* also indicates that this name had appeared in previously published literature. But, here again, there is confusion. The study referred to within the brackets [5] of the 1937 paper is that of Chabanaud (1931). The expectation when consulting this citation is to find reference to this trinomial; on the contrary, the only names of tongue soles appearing in that Chabanaud (1931) paper are *Paraplagusia dollfusi* and *Dollfusichthys sinusarabici*. Thus, reference to the Chabanaud (1931) paper is somewhat confusing as the name *Cynoglossus (Trulla) dollfusi* does not appear anywhere in that work, nor does it appear in any of the other literature cited in Gruvel & Chabanaud (1937). Therefore, appearance of *Cynoglossus (Trulla) dollfusi* Chabanaud, in Gruvel & Chabanaud, 1937 represents first use of this name, but it is never explicitly stated to which of the two species appearing in the prior publication (1931) of Chabanaud that this name applies.

Given this situation, it is not difficult to understand how subsequent authors

(Fowler 1956, Dor 1984, and Desoutter et al. 2001) erroneously perceived that Chabanaud had described a new species within the Gruvel and Chabanaud paper. Had Gruvel & Chabanaud (1937) enclosed Chabanaud's name within parentheses and provided the date of authorship for this name, they would have clearly demonstrated their intent to indicate that this nominal species had previously been described, and moreover, they would have made an explicit indication of the generic reassignment of the nominal species, *Paraplagusia dollfusi*.

Although Gruvel & Chabanaud (1937) never clearly indicated in their footnote which of the two species appearing in Chabanaud (1931) they referred to, most likely it was *Paraplagusia dollfusi*, because this nominal species shares many similar features with those of the specimen discussed in the account of *Cynoglossus (Trulla) dollfusi*, and because both names are patronyms honoring M. R. Ph. Dollfus. The other nominal species, *Dollfusichthys sinusarabici*, differs markedly from specimens appearing in the accounts of *Paraplagusia dollfusi* and *Cynoglossus (Trulla) dollfusi* in possessing only a single ocular-side lateral line and in having two ocular-side nostrils (vs. the two (?) or three ocular-side lateral lines and a single ocular-side nostril in the specimens identified as *Paraplagusia dollfusi* and *Cynoglossus (Trulla) dollfusi*).

Menon (1977), in his species account for *Cynoglossus dollfusi* (Chabanaud, 1931), regarded *Cynoglossus dollfusi* (Chabanaud, 1931) as a new combination for *Paraplagusia dollfusi* Chabanaud, 1931. Based on the information presented in his synonymy in the species account for *C. dollfusi*, Menon (1977) also indicated his conclusion that transfer of this species to *Cynoglossus* had previously been done in Gruvel & Chabanaud (1937). Menon, however, provided no additional comment or discussion regarding the evidence upon which he accepted Gruvel & Chabanaud's

(1937) conclusion to transfer the species *dollfusi* from *Paraplagusia* to *Cynoglossus*. Nor does Menon present any discussion in his account justifying why he accepted transfer of this nominal species from *Paraplagusia* to *Cynoglossus* as an appropriate taxonomic decision.

We agree with Menon's (1977) conclusion that no new species was described in Gruvel & Chabanaud (1937) when they used the trinomial *Cynoglossus (Trulla) dollfusi* Chabanaud for the specimen in their study. Even though Gruvel and Chabanaud did not place Chabanaud's name in parentheses to indicate that *Cynoglossus (Trulla) dollfusi* Chabanaud was a new combination for *Paraplagusia dollfusi* Chabanaud, 1931, nor did they explicitly state that this name represented a new combination reflecting transfer of the species from *Paraplagusia* to *Cynoglossus*, we believe, based on the evidence above, that this was exactly their intention. Thus, we conclude that *Cynoglossus (Trulla) dollfusi* Chabanaud represents a new combination reflecting the decision by Gruvel and Chabanaud to transfer Chabanaud's nominal species, *dollfusi*, from *Paraplagusia* to *Cynoglossus*, and because it features only a single ocular-side nostril it is classified in the subgenus *Trulla* (see additional comments below on this subgenus).

Final, and convincing, evidence resolving nomenclatural status of the trinomial, *Cynoglossus (Trulla) dollfusi*, lies buried in the last paragraph of a publication authored by Chabanaud (1947) reporting on new additions to the Red Sea fish fauna. In this paper, which has been overlooked by other authors working with these nominal species, Chabanaud deals with two specimens of *Cynoglossus* collected in the Gulf of Suez that he has identified as *Cynoglossus sealarki* Regan, 1908. These specimens share some features in common with those characterizing *C. sealarki*, however, they differ in having only 7 or 8 caudal-fin rays, whereas *C. sealarki* typically has 10

caudal-fin rays (Menon, 1977, Munroe, in press; Munroe, unpubl. data). Despite differences in counts of caudal-fin rays, it is possible that these two specimens identified by Chabanaud (1947) are *C. sealarki*. In this Chabanaud paper (1947), though, a more significant statement of nomenclatural importance appears in the last paragraph of the text where Chabanaud reveals, almost as a postscript, that one of the specimens he identified as *C. sealarki* is the holotype of *Paraplagusia dollfusi* Chabanaud. Furthermore, and most importantly regarding the nomenclature and authorship of the names *Paraplagusia dollfusi* and *Cynoglossus dollfusi*, is a brief comment Chabanaud included in the last sentence stating that *Paraplagusia dollfusi* "later became" *Cynoglossus (Trulla) dollfusi*. Here, for the first time since this trinomial was published (Gruvel & Chabanaud 1937), is it revealed by Chabanaud that *Cynoglossus (Trulla) dollfusi* was proposed as a new combination reflecting Gruvel & Chabanaud's (1937) decision to transfer Chabanaud's nominal species, *Paraplagusia dollfusi*, to the subgenus *Trulla* in the genus *Cynoglossus*. This taxonomic decision is also highlighted again in a footnote appearing in Chabanaud (1954). Nowhere else in the historical literature of this trinomial is it as clearly evident that *Cynoglossus (Trulla) dollfusi* was proposed as a new combination as it is in these two papers. Why Gruvel & Chabanaud (1937) or Chabanaud (1947, 1954) never highlighted this fact beyond these brief and footnoted statements is perplexing, but if it weren't for these brief comments, the status and authorship of *Cynoglossus (Trulla) dollfusi* (Chabanaud, 1931) might never be resolved with certainty.

Based on information presented in our discussion of the historical literature, together with that presented in Chabanaud (1947), we can confidently conclude that the trinomial *Cynoglossus (Trulla) dollfusi* was proposed as a new combination for

Paraplagusia dollfusi Chabanaud, 1931. Therefore, *Cynoglossus (Trulla) dollfusi* is based on the unique holotype of *Paraplagusia dollfusi* Chabanaud, 1931. The specimen appearing in Gruvel & Chabanaud (1937) represents the second known specimen of the species, but does not have type status. Contrary to information in Eschmeyer & Fricke (2016), no syntypes are associated with the name, '*Cynoglossus (Trulla) dollfusi* Chabanaud, in Gruvel & Chabanaud, 1937.'

Cynoglossus or *Paraplagusia*: *What is the appropriate generic assignment for Cynoglossus (Trulla) dollfusi (Chabanaud, 1931)?*—In 1931, Chabanaud provided a brief description of the genus *Paraplagusia* Bleeker, wherein he listed several external morphological features characterizing this genus. These included possession of a prolonged rostral hook; a single ocular-side nostril; eight caudal-fin rays; presence of more than one lateral line on the ocular side; and absence of a lateral line on the blind side of the body. One important defining character shared by all members of *Paraplagusia* that is notably absent from the list of characters presented in Chabanaud's (1931) re-description of this genus is the presence of labial papillae (fringes) on the ocular-side lips. This feature has long been recognized as a distinctive character for species now assigned to *Paraplagusia* (Günther 1862, Bleeker 1865, Norman 1928, Ochiai 1963, Menon 1980), and is also identified in more contemporary studies (Chapleau 1988, Chapleau et al. 1991, Chapleau & Renaud 1993) as one of the synapomorphies defining the genus *Paraplagusia*. By excluding presence of labial papillae on the ocular-side lips as a defining character in his modified concept of the genus *Paraplagusia* Bleeker, Chabanaud changed the definition of this genus.

This feature (absence of labial papillae) is also notably absent in Chabanaud's description of *Paraplagusia dollfusi* itself. But, absence of labial papillae on the

ocular-side lips would not have precluded Chabanaud from assigning his new species to *Paraplagusia*, especially *Paraplagusia* as now defined by Chabanaud. Chabanaud's (1931) decision to assign his new species of tongue sole, which lacks labial papillae on its ocular-side lips, to *Paraplagusia*, contrasts markedly with generic assignments made by earlier investigators working with tongue soles. In the time period between publication of Bleeker (1865) and Chabanaud (1931), all other nominal species of tongue soles with labial papillae on their ocular-side lips were placed in *Paraplagusia*, or in other genera (but not *Cynoglossus*) now considered as junior subjective synonyms of *Paraplagusia*.

Why Chabanaud didn't mention this feature when determining a generic assignment for his new species, or why he didn't consider the absence of such an important feature to be diagnostic when describing and comparing his new species to other species bearing conspicuous labial papillae on their ocular-side lips and that already were assigned to *Paraplagusia*, is rather curious. Instead of noting the absence of labial papillae on the ocular-side lips as an important feature distinguishing his new species from others then currently assigned to *Paraplagusia*, Chabanaud provided no discussion about this character.

Perhaps Chabanaud (1931) was unaware that some species of *Cynoglossus*, although they share features in common with those recorded for *Paraplagusia*, including 8 caudal-fin rays, multiple lateral lines on the ocular side, no lateral lines on the blind side, and only one ocular-side nostril, differ from species of *Paraplagusia* in lacking labial papillae. As early as 1858, Kaup had erected the genus, *Trulla*, for *Plagusia trulla* Cantor, 1849, a species of tongue sole featuring two ocular-side lateral lines, one ocular-side nostril, and without labial papillae on the ocular-side lips. Günther (1862: 492) later synonymized several genera, including *Trulla*

Kaup, 1858, into a more inclusive *Cynoglossus*.

Apparently, when the second tongue sole specimen was later identified by Gruvel & Chabanaud (1937) as being conspecific with *Paraplagusia dollfusi* Chabanaud, 1931, they were aware of Kaup's (1858) earlier study where he created the genus *Trulla* for species of tongue soles characterized by the combination of features mentioned above, and that are also present in *Paraplagusia dollfusi*. Or, these authors may have just followed the classification presented in Günther's (1862) study. In either case, by 1937 *Trulla* had been relegated to a subgenus within an expanded *Cynoglossus* according to the then most recent classification of tongue soles (Günther 1862). So, when Gruvel and Chabanaud identified their specimen as conspecific with *Paraplagusia dollfusi* Chabanaud, 1931, instead of considering this nominal species (*dollfusi*) as a member of *Paraplagusia* Bleeker, they now realized this species shared the same combination of characters, including the absence of labial papillae on the ocular-side lips, that characterize tongue soles of the subgenus *Trulla* Kaup of the genus *Cynoglossus*. We think Gruvel and Chabanaud specifically assigned the species, *dollfusi*, to this subgenus because *Trulla* was created to include species of cynoglossid tongue soles featuring only one ocular-side nostril and no labial papillae.

Menon (1977) unquestionably accepted that the nominal species, *dollfusi*, had been transferred from *Paraplagusia* to *Cynoglossus* by Gruvel & Chabanaud (1937). His acceptance of this transfer is also reinforced in his later (1980) revision of *Paraplagusia*, wherein no mention is made of the nominal species, *Paraplagusia dollfusi* Chabanaud, 1931, either as a valid species or as a junior subjective synonym of any of the species Menon considered valid in *Paraplagusia*. Later studies (Chapleau et al. 1991, Chapleau & Re-

naud 1993) describing and comparing new species of *Paraplagusia* also do not mention *Paraplagusia dollfusi* Chabanaud, 1931 in their synonymies, or when comparing their new species with previously described species of *Paraplagusia*. We, too, agree with Gruvel & Chabanaud (1937) and Menon (1977, 1980) that Chabanaud's nominal species, *dollfusi*, is a member of *Cynoglossus*, and not *Paraplagusia*.

Conclusions

Paraplagusia dollfusi Chabanaud, 1931 is a valid name for a nominal species of tongue sole described on the basis of a single, unique type, which is apparently lost. A second specimen was identified as this species by Gruvel & Chabanaud (1937) using the name *Cynoglossus (Trulla) dollfusi* Chabanaud. This specimen is also reported as lost. Chabanaud, and perhaps also, Gruvel, are the only researchers who ever dealt with the actual specimens. All subsequent researchers authoring studies using these names have had to rely on information appearing in the original descriptive accounts of these specimens, or in many cases, have relied on information appearing in secondary sources of literature when making their conclusions regarding the nomenclature, authorship, or status for the species represented by these names.

Although never clearly indicated in Gruvel & Chabanaud (1937), the trinomial appearing in their work represents a new combination reflecting transfer by these authors of the nominal species, *Paraplagusia dollfusi* Chabanaud, 1931, to the genus *Cynoglossus* and the subgenus *Trulla*. Gruvel & Chabanaud (1937) confounded this point by neglecting to provide any written indication, or in neglecting to provide appropriate punctuation (parentheses surrounding Chabanaud's name following this trinomial) to

clearly indicate this trinomial represented a new combination for this nominal species. Regardless, and contrary to what some authors have concluded, *Cynoglossus (Trulla) dollfusi* is not the name for a newly-described species of tongue sole. Proof supporting this conclusion is provided from evidence extracted from several publications. However, the only unequivocal statements reflecting this intent by Gruvel & Chabanaud (1937) appear in the text and footnotes in Chabanaud (1947, 1954). The appropriate name and authorship for this nominal species is *Cynoglossus (Trulla) dollfusi* (Chabanaud, 1931). Because *Paraplagusia dollfusi* Chabanaud 1931 and *Cynoglossus (Trulla) dollfusi* (Chabanaud, 1931) refer to the same nominal species, these are not possible homonyms as was suggested by Desoutter et al. (2001).

Based on morphological features reported in the original description, as well as information presented in descriptions of the second-known specimen of *P. dollfusi* Chabanaud, 1931 (Gruvel & Chabanaud 1937) and in the re-description of the holotype (as *C. sealarki*) in Chabanaud (1947), this nominal species does not belong in *Paraplagusia*. Instead, Gruvel & Chabanaud's (1937) transfer of Chabanaud's nominal species, *Paraplagusia dollfusi*, to the subgenus *Trulla* in the genus *Cynoglossus* is the appropriate assignment of this species.

Additional work is needed to determine the appropriate concept for this species, as the original concept of this species (Chabanaud 1931, Gruvel & Chabanaud 1937) has been confused (Fowler 1957, Dor 1984, Desoutter et al. 2001, Eschmeyer & Fricke 2016) or changed (Chabanaud 1947, Menon 1977, and literature based on Menon) by actions of subsequent researchers attempting to resolve taxonomic issues surrounding these names. Chabanaud (1947, 1954) considered *Cynoglossus (Trulla) dollfusi* (Chabanaud, 1931) as the junior subjective synonym of

Cynoglossus sealarki Regan. Later, Menon (1977) considered that *Cynoglossus cleopatridis* Chabanaud, 1949 was a junior subjective synonym of *C. dollfusi* (Chabanaud) and then based his re-description of *Cynoglossus dollfusi* (Chabanaud, 1931) only on data for the holotype of this other nominal species. The decision to re-describe *C. dollfusi* based only on the damaged holotype of *C. cleopatridis* was wrong because *C. cleopatridis* differs from *C. dollfusi* in several important morphological features (Munroe, in press; Munroe, unpubl. data), and these two nominal species should not be considered synonymous.

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