ABSTRACT

Objective: The aim of this study was to make a systematic inventory of Anuran species in three agro-industrial zones of South-East Côte d’Ivoire, with a view to making a contribution to the knowledge of amphibians in Côte d’Ivoire.

Method and Results: Anurans were captured using catch boxes and dip nets. Species identification was done using the determination keys proposed by Rödel (2000a) and Frétey et al. (2011). Twenty-eight (28) species belonging to 12 genus and 10 families have been inventoried. The family Ptychadenidae is the most diversified with 6 species. They are followed by Hyperoliidae and Phrynobatrachidae both having 5 species each. Arthroleptidae and Bufonidae contain 4 species and 3 species respectively. Dicroglossidae, Hemisotidae, Pipidae, Pyxicephaliidae and Ranidae are the least diversified with one (1) species each. Three unidentified species have also been inventoried: Arthroleptis sp, Sclerophrys sp and Phrynobatrachus sp. It appears also 6 species are common to all the three plantations while 1, 4 and 8 species are specific to coconut plantation, palm plantations and banana plantations respectively.

Conclusion and application: This study has made it possible to make a qualitative inventory of the Anura in three Agro-industrial zones of the South-eastern Côte d’Ivoire. These results will serve as a reference for further investigations of the amphibians and the development of appropriate measures to ensure better protection and sustainable exploitation of Anurans in Côte d’Ivoire.

Keywords: Anurans, qualitative inventory, diagnosis, agro-industrial zone, Côte d’Ivoire.
protein that is highly valued to certain population of Western Côte d’Ivoire, especially the Yacouba, Guéré and Wobe (Blé et al., 2016). There thighs are sold in several areas namely markets, restaurants and even supermarkets. In addition, Anurans arouse a fundamental interest to farmers because of their diet. They consume invertebrates in general and insects in particular (Konan et al., 2016), which makes them, organisms likely to reduce the rates of insects' known to be destroyers of plantations and thereby participate in the increase of farm yields (Channing, 2001). Moreover, Anurans are not absolved from the harmful effects of agricultural practices. The use of Pesticide is a common practice that negatively affects Anuran population (Bridges and Semlitsch 2000, Semlitsch 2000). These farming practices modify the habitats, the species richness and the feeding habits of these animals by not giving them the opportunity to choose and feed on their preferred prey (Hoyos-Hoyos et al., 2012, Menin et al., 2015). In the face of these threats, an investigation on the batrachofauna in these areas is necessary. This will elaborate adequate measures to ensure a better protection and a durable exploitation of Anurans. In Côte d’Ivoire, several surveys have been carried out on the diversity of the Anuran population. Most of these surveys have been carried out in protected areas (Rödel and Spieler 2000, Rödel 2000b, Rödel and Branch 2002, Rödel 2003, Rödel and Ernest 2003, Rödel and Ernest 2004, and Adebà et al., 2010). In the south-east of Côte d’Ivoire, studies on the biodiversity of Anuran population have been undertaken in primary tropical moist forests, in this case the Banco National Park (Assemian et al., 2006), the marshes forest Tanoé-Ehy (Kpan et al., 2014) and a village forest in Yakassé-Mé (Kouamé et al., 2014). Studies of the batrachofauna in agricultural and urban areas (Kouamé et al., 2015) remain very rare or non-existent. The present study aimed at making the first systematic inventory of Anuran in three agro-industrial zones of South-East Côte d'Ivoire.

**MATERIAL AND METHODS**

**Study Area:** This study was conducted in three large plantations in south-eastern Côte d’Ivoire (Figure 1). These are the coconut plantations in Grand-Bassam (5° 12'N, 3° 45'W), the palm tree plantations in Toumangué / N’Ziko (5° 23'N, 3° 24'W) and the Banana plantations in Akressi (5° 41'N; 3° 05'W). The study area is located between 5° and 5° 50' west longitude. The choice of sites was made due to accessibility, availability and especially the presence of a wetland (pond) in each plantation. The coconut groves in Grand-Bassam are characterized by the presence of water in a temporary way whereas the palm plantations in Toumangué and the banana plantations in Akressi are characterized by the presence of water permanently.

**Anuran sampling and identification:** Anuran sampling was conducted monthly from November 2016 to October 2017 with a frequency of two days in each plantation. The duration of this hunting activity was two hours with the same hunting efforts. The method used for sampling was the visual collection method (Rödel and Ernest, 2004). The team consisted of two or three people, walked in the plantation without following a specific direction and captured with the help of catching-box and scoop net, Anouran alive and visible in a given site. This method was used both during daytime sampling (6h to 8h) and evening sampling (19h to 21h). This time schedule has been described by Tohé et al. (2008) because during this period of the day, the Anuras croaking activity is intense and the daylight brightness is low. During the evening sampling a flashlight was used to enable locating the animals. The Anuras, dazzled by the light beam of the torch were immobilized and thus captured easily alive. The captured animals were identified using Rödel's determination keys (2000a) and Frétey et al. (2011) and information such as: Sex and snout-vent length (SVL) were recorded for each individual animal.
RESULTS AND DISCUSSION

Inventory: The results of the qualitative Anuran inventory in three agro-industrial zones in South-East Côte d'Ivoire are presented in a condensed form in Table 1. A total of 28 species divided into 12 genus belonging to 10 families were recorded in all sampled areas. The most diversified family is Ptychadenidae with 6 species. They are followed by Hyperoliidae and Phrynobatrachidae both having 5 species each. Arthroleptidae and Bufonidae comprising respectively 4 species and 3 species. Dicroglossidae, Hemisotidae, Pipidae, Pyxicephalidae and Ranidae are the least diversified with one (1) species each. Three unidentified species have also been inventoried: Artroleptis sp, Sclerophrys sp and Phrynobatrachus sp. The total number of Anuran species (28 species) is not exhaustive given that not all the areas of the different plantations were sampled and only one sampling method "visual sampling method" was used for the systematic inventory of Anurans. However, compared to the Banco National Park with 28 species (Assemian et al., 2006) and a village forest of Yakassé-Mé with 24 species (Kouamé et al., 2014), the number of species found in this study is considerable (Anuran species inventoried in the South East of Côte d'Ivoire). In the coconut plantation in Grand-Bassam 10 species, in the palm groves in Toumangué 18 species and in the banana plantations in Akressi 20 species have been listed. In view of these results, it appears that six
species (Sclerophrys maculatus, Hoplobatrachus occipitalis, Afrixalus dorsalis, Hyperolius concolor, Ptychadena mascareniensis, P. pumilio) are common to all the three plantations while (Phrynobatrachus calcaratus), four species (Arthroleptis poecilonotus, Arthroleptis sp, Leptopelis viridis, Hemisus marmoratus) and eight species (Leptopelis macrotis, Sclerophrys sp, Afrixalus vittiger, Hyperolius fusciiventris burtoni, Phrynobatrachus liberiensis, Ptychadena bibroni, Aubria subsigillata, Amnirana albolabris) are specific to coconut plantation, palm plantations and banana plantations respectively.

Table 1: List of Anuran species found in three plantations in South-East Côte d’Ivoire

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>GENUS</th>
<th>SPECIES</th>
<th>ST 1</th>
<th>ST 2</th>
<th>ST 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthroleptidae</td>
<td>Arthroleptis</td>
<td>Arthroleptis poecilonotus Peters, 1863</td>
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<tr>
<td></td>
<td></td>
<td>Arthroleptis sp</td>
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<tr>
<td></td>
<td></td>
<td>Leptopelis macrotis Schétt, 1967</td>
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<tr>
<td></td>
<td></td>
<td>Leptopelis viridis Günther, 1868</td>
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<tr>
<td>Bufonidae</td>
<td>Sclerophrys</td>
<td>Sclerophrys maculatus (Hallowell, 1855)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Sclerophrys regularis (Reuss, 1834)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Sclerophrys sp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dicroglossidae</td>
<td>Hoplobatrachus</td>
<td>Hoplobatrachus occipitalis (Günther, 1859)</td>
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<td></td>
<td>*</td>
</tr>
<tr>
<td>Hémisotidae</td>
<td>Hemisus</td>
<td>Hemisus marmoratus Peters, 1882</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Hyperoliidae</td>
<td>Afrixalus</td>
<td>Afrixalus dorsalis (Peters, 1875)</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Afrixalus vittiger (Peters, 1876)</td>
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<tr>
<td></td>
<td></td>
<td>Hyperolius concolor Rapp, 1842</td>
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<tr>
<td></td>
<td></td>
<td>Hyperolius guttulatus Günther, 1859</td>
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<tr>
<td></td>
<td></td>
<td>Hyperolius fusciventris burtoni Schétt, 1967</td>
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<td></td>
</tr>
<tr>
<td>Phrynobatrachidae</td>
<td>Phrynobatrachus</td>
<td>Phrynobatrachus accraensis Günther, 1859</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Phrynobatrachus calcaratus Peters, 1863</td>
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<tr>
<td></td>
<td></td>
<td>Phrynobatrachus latifrons Ahl, 1924</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phrynobatrachus liberiensis Barbout &amp; Loveridge, 1927</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phrynobatrachus sp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipidae</td>
<td>Silurana</td>
<td>Silurana tropicalis Gray, 1864</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ptychadenidae</td>
<td>Ptychadena</td>
<td>Ptychadena aequiplicata (werner, 1898)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Ptychadena bibroni (hallowell, 1845)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Ptychadena longirostris (Peters, 1870)</td>
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<tr>
<td></td>
<td></td>
<td>Ptychadena mascareniensis (Duméril et Bibron, 1841)</td>
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<tr>
<td></td>
<td></td>
<td>Ptychadena oxyrhynchus (Peters, 1870)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ptychadena pumilio (Boulengere, 1920)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyxicephaliidae</td>
<td>Aubria</td>
<td>Aubria subsigillata (Duméril, 1856)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranidae</td>
<td>Amnirana</td>
<td>Amnirana albolabris (Hallowell, 1856)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>12</td>
<td>28</td>
</tr>
</tbody>
</table>

ST 1 = Coconut plantation; ST 2 = Palm plantation; ST 3 = Banana plantation; *= present

The qualitative analysis of Anuran populations in coconut plantations in Grand-Bassam, Palm plantation in Toumanguié and Banana plantation in Akressi has shown that there is a specific diversity of the animal population in the wet habitat. Indeed, the presence of rivers, streams, and ponds around the plantations...
creates favorable conditions for the growth of Anurans. The low number of species observed in the coconut plantations in Grand-Bassam (10 species) is due to the virtual absence of permanent water points in these zones. The largest number of species (20 and 18) recorded in the Banana plantations in Akressi and the Palm plantation in Toumanguié respectively can be explained by the permanent presence of water bodies in these areas and humid primary forests close to the plantations. Therefore, that explained the presence of the following *Silurana tropicalis* (aquatic frog), *Aubria subsigillata* (swamp species), *Amnirana albolarbis*, *Hyperolius fusciventeris*, *Hemisus marmoratus* (found mostly by the stream banks) and *Leptopelis macrotis*, *L. viridis*, *Phrynobatrachus liberisis* (wet primary forest species). Our observations are in agreement with that of Sinsch (1991) and Vallan (2000) who made known that the permanent presence of water points in an environment is essential for reproduction and determine their spatial distribution. Species such as: *Sclerophrys maculatus*, *Hoplobatrachus occipitalis*, *Afrixalus dorsalis*, *Hyperolius concolor*, *Ptychadena mascareniensis* and *P. pumilio*, picked in all plantations are cosmopolitan species. Indeed, these species have been described by Rödel (2000b) as typical Anurans in savannah areas and degraded habitats. These species have therefore developed coping strategies to survive in man-disturbed environments. **Diagnosis:** At the end of the various observations and identifications, the families, genus and the species were grouped in alphabetical order and each species is briefly described (morphometric and meristic characteristics). The photos of the different taxa are also presented (Figure 2).
Oungbe et al., *J. Appl. Biosci. 2018*  Systematic inventory of anuran species (amphibians) in three agro-industrial zones in the Southeast of Cote d'Ivoire.

<table>
<thead>
<tr>
<th>A 1</th>
<th>A 2</th>
<th>B 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black spot supra-tympanal</td>
<td>Hourglass on the dorsal integument</td>
<td>Stretch Webbing leg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B 2</th>
<th>C 1</th>
<th>C 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark T occipital</td>
<td>Tubers clearly visible on Legs</td>
<td>Prominent parotid gland</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C 3</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost cylindrical body</td>
<td>Eye Very prominent in occipital</td>
<td>Small eyes with a pointed snout Smal</td>
</tr>
</tbody>
</table>
Systematic inventory of anuran species (amphibians) in three agro-industrial zones in the Southeast of Côte d'Ivoire.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>2 to 3 clear longitudinal bands</td>
</tr>
<tr>
<td>F2</td>
<td>3 dark longitudinal bands</td>
</tr>
<tr>
<td>G1</td>
<td>Yellow back uniform during the day or green at night</td>
</tr>
<tr>
<td>G2</td>
<td>Brown back with large yellow spots or dark brown back</td>
</tr>
<tr>
<td>G3</td>
<td>Fine dorsolateral band</td>
</tr>
<tr>
<td>H1</td>
<td>Continuous black band on the flank</td>
</tr>
<tr>
<td>H2</td>
<td>Presence of a palpebral spur</td>
</tr>
<tr>
<td>H3</td>
<td>Presence of a lateral band</td>
</tr>
<tr>
<td>H4</td>
<td>Facial profile</td>
</tr>
</tbody>
</table>

Oungbe et al., *J. Appl. Biosci.* 2018
<table>
<thead>
<tr>
<th>Image 1</th>
<th>Image 2</th>
<th>Image 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="X-shaped prominent dorsal folds" /></td>
<td><img src="image2" alt="Black horny claws" /></td>
<td><img src="image3" alt="Many dorsal folds fragmented" /></td>
</tr>
<tr>
<td><strong>H5</strong></td>
<td><strong>I</strong></td>
<td><strong>J1</strong></td>
</tr>
<tr>
<td><strong>4 pairs of dorsal folds discontinuous</strong></td>
<td><strong>Long Supratympanal fold and Fine glandular fold</strong></td>
<td><strong>Vocal sac position super</strong></td>
</tr>
<tr>
<td><img src="image4" alt="4 pairs of dorsal folds discontinuous" /></td>
<td><img src="image5" alt="4 pairs of dorsal folds discontinuous" /></td>
<td><img src="image6" alt="4 pairs of dorsal folds discontinuous" /></td>
</tr>
<tr>
<td><strong>J2</strong></td>
<td><strong>J3</strong></td>
<td><strong>J4</strong></td>
</tr>
<tr>
<td><strong>Prominent continuous dorsal fold</strong></td>
<td><strong>4 pairs of dorsal folds continuous</strong></td>
<td><strong>Femoral glands</strong></td>
</tr>
<tr>
<td><img src="image7" alt="Prominent continuous dorsal fold" /></td>
<td><img src="image8" alt="4 pairs of dorsal folds continuous" /></td>
<td><img src="image9" alt="Femoral glands" /></td>
</tr>
<tr>
<td><strong>J6</strong></td>
<td><strong>J5</strong></td>
<td><strong>K</strong></td>
</tr>
</tbody>
</table>
Figure 2: Photos of the different taxa of anuran in three agro-industrial zones in the Southeast of Cote d'Ivoire

Family Arthroleptidae Mivart, 1869
Genus Arthroleptis Smith, 1849
Arthroleptis poecilonotus Peters, 1863 (Figure 2 : A 1)
This species is characterized by a tympanum representing approximately ¼ of the diameter of the eye, a finely granular dorsal integument and a supra-tympanal black spot. The Snout-Vent Length (SVL) is 27.3 to 32 mm in the male (♂) and 25. 7 to 35 mm in the female (♀).
Arthroleptis sp1 (Figure 2 : A 2)
Morphologically closer to Arthroleptis poecilonotus, this species has a short third finger and the presence of the hourglass pattern on the dorsal integument. The Snout-Vent Length (SVL) is 18 to 21.9 mm in the male (♂) and 18.6 to 30 mm in the female (♀).

Genus Leptopelis Günther, 1859
Leptopelis macrotis Schiøtz, 1967 (Figure 2 : B 1)
This taxon has extensive pediculated webs, a white belly with dark patterns. The Snout-Vent Length (SVL) is 48.8 mm in the female (♀). A specimen was found in the banana plantations in Akressi.
Leptopelis viridis Günther, 1868 (Figure 2 : B 2)
This species has free fingers, a brown or gray dorsal surface with a dark triangle or dark occipital T on the eyelids, a series of very variable spots, hind limbs have transverse bars. The Snout-Vent Length (SVL) is 51.45 mm in the female (♀). A specimen was observed in the Palm plantations in Toumangué / NZikro.

Family Bufonidae Gray, 1825
Genus Sclerophrys Tschudi,1838
Sclerophrys maculatus (Hallowell, 1855) (Figure 2 : C 1)
Characterized by flat and poorly bounded parotid glands with distinct warts, the webbed toes are clearly visible with protuberances on the webbed toes, many tubercles are visible on the feet and the vocal sac with only one mouth opening. The Snout-Vent Length (SVL) is 26 to 54.6 mm in the male (♂) and 30.18 to 58.35 mm in the female (♀).
Sclerophrys regularis (Reuss, 1834) (Figure 2 : C 2)
This taxon has parotid glands protruding and well bounded more or less smooth with warts indistinct, a vocal sac with two mouth openings. The Snout-Vent Length (SVL) is 52.6 to 62.6 mm in the male (♂) and 58.35 to 70.3 mm in the female (♀).
Sclerophrys sp (Figure 2 : C 3)
This species is characterized by more or less smooth parotid glands and an almost cylindrical body. The Snout-Vent Length (SVL) is 60.5 mm in the male (♂). A specimen was identified in the Banana plantation Akressi.

Family Dicroglossidae Anderson, 1871
Genus Hoplobatrachus Peters, 1863
Hoplobatrachus occipitalis (Günther, 1859) (Figure 2 : D)
The characteristic of this taxon it has very visible eyes in the dorsal (occipital) position. The Snout-Vent Length (SVL) is 56.4 to 107 mm in the male (♂) and 41.4 to 135.5 mm in the female (♀).

Family Hemisotidae Cope, 1867
Genus Hemisus Günther, 1859
Hemisus marmoratus Peters, 1882 (Figure 2 : E)
This plump, almost cylindrical species has a pointed snout, two small, barely visible eyes, and a highly developed internal metatarsal tubercle. The Snout-Vent Length (SVL) is 51.5 mm in the female (♀). A specimen was found in the palm plantation in Toumangué / NZikro.

Family Hyperoliidae Lawrence, 1943
Genus Afrixalus Laurent, 1944
Afrixalus dorsalis (Peters, 1875) (Figure 2 : F 1)
This species is characterized by the presence of 2 to 3 clear longitudinal bands on the back with a pupil in vertical position, the male has an orange-colored throat. The Snout-Vent Length (SVL) is 18.17 to 31.5 mm in the male (♂) and 22.62 to 30.4 mm in the female (♀).
Afrixalus vittiger (Peters, 1876) (Figure 2 : F 2)
This taxon has 3 dark longitudinal bands on the back forming a triangle above the head, an absence of vomerine teeth. The snout-vent length (SVL) is 22.35 mm in the male (♂). A specimen was found in the banana plantations in Akressi.

Genus Hyperolius Rapp, 1842
Hyperolius concolor Rapp, 1842 (Figure 2 : G 1)
This species is characterized by a slender body, a vocal sac with a small gular disk, a yellow back uniform during the day or green at night with tiny dark spots. The Snout-Vent Length (SVL) is 21.39 to 26.3 mm in the male (♂) and 21.5 to 35 mm in the female (♀).
Hyperolius guttulatus (Günther, 1859) (Figure 2 : G 2)
This taxon has a rugged body, a vocal sac with a large gular disc, a brown back with large yellow spots or dark brown back with several diffuse orange dots. The Snout-Vent Length (SVL) is 27.9 to 37.7 mm in the male (♂) and 27.4 to 40.6 mm in the female (♀).
Hyperolius fusciventris burtoni Schiøtz, 1967 (Figure 2 : G 3)
The peculiarity of this taxon is the fine dorsolateral band. The back is green or beige with often a black vertebral line without drawing of the hourglass, clear flank and belly. The Snout-Vent Length (SVL) is 25.5 mm in the male (♂). A specimen was picked in the banana plantations in Akressi.

Family Phrynobatrachidae Lawrence, 1941
Genus Phrynobatracus Günther, 1862
Phrynobatracus accraensis (Günther, 1859) (Figure 2 : H 1)
This species is characterized by a continuous black band on the flank (from the eye to the hip), a yellow vocal sac in the male, large discs at the ends of the toes. The Snout-Vent Length (SVL) is 16.5 to 20.1 mm in the male (♂) and 17.7 to 25.3 mm in the female (♀).

Phrynobatrachus calcaratus (Peters, 1863) (Figure 2 : H 2)
This taxon is characterized by the presence of reduced webs reaching only the first phalanx, a presence of a palpebral spur. The Snout-Vent Length (SVL) is 18.3 mm in the male (♂). A specimen was observed in the coconut plantations in Grand Bassam.

Phrynobatrachus latifron Ahl, 1924 (Figure 2 : H 3)
This species is distinguished by the presence of a pointed muzzle and a lateral dorsal band. The Snout-Vent Length (SVL) is 18.8 to 20.3 mm in the male (♂) and 17.7 to 21.85 mm in the female (♀).

Phrynobatrachus liberiensis Barbout & Loveridge 1927 (Figure 2 : H 4)
The face profile is dark (from the tip of the muzzle to the supra tympanal fold), many white dots on the dorsal surface. The Snout-Vent Length (SVL) is 36.5 mm in the female (♀). A specimen was observed in the banana plantations in Akressi.

Phrynobatrachus sp (Figure 2 : H 5)
This species is characterized by prominent dorsal dermal folds protruding in the form of X behind the orbits, the pedaling webs is well developed. The Snout-Vent Length (SVL) is 16.5 to 18 mm. The Sex could not be identified.

Family Pipidae Gray, 1825
Genus Silurana Gray, 1864
Silurana tropicalis Gray, 1864 (Figure 2 : I)
This taxon has webs at the ends of its limbs, three toes with metatarsal tubercles and black horny claws, tentacles under the ocular shorter than half the diameter of the eye and two rows of dorsal bulges. The Snout-Vent Length (SVL) is 40.9 to 48.6 mm in the male (♂) and 22.7 to 43.2 mm in the female (♀).

Family Ptychadenidae Dubois, 1987
Genus Ptychadena Boulenger, 1917
Ptychadena aequispinalis (werner, 1898) (Figure 2 : J 1)
This species is characterized by several fragmented dorsal folds, the second fold is interrupted at several levels, the supratympanal fold does not merge with the dorsolateral fold, an absence of sacral fold. The Snout-Vent Length (SVL) is 35.1 to 45.2 mm in the male (♂) and 30.9 to 50.6 mm in the female (♀).

Ptychadena bibroni (Hallowell, 1845) (Figure 2 : J 2)
Characterized by 4 pairs of dorsal folds along the vertebral column, the second fold starting from the vertebral line is interrupted at mid length, the supratympanal fold merges with the dorsolateral discontinuous fold, presence of a sacral fold. The Snout-Vent Length (SVL) is 58.7 mm in the male. A specimen was captured in the banana plantations in Akressi.

Ptychadena longirostris (Peters, 1870) (Figure 2 : J 3)
Dorsal glandular folds are narrow (thin) and flattened, lack of dorsolateral line, long supra-tympanal fold, presence of a black band on the flank (from the tip of the muzzle to the belly). The Snout-Vent Length (SVL) is 44.2 to 60.5 mm in the male (♂) and 50.5 to 57.4 mm in the female (♀).

Ptychadena mascareniensis (Duméril and Bibron, 1841) (Figure 2 : J 4)
This species is characterized by extensive pediculated webs, 3 pairs of distinct dorsal folds, dark spot extended to the shoulder, male with two lateral vocal sacs in the upper position. The Snout-Vent Length (SVL) is 37 to 47.7 mm in the male (♂) and 26, 7 to 58.2 mm in the female (♀).

Ptychadena oxyrhynchus (Peters, 1870) (Figure 2 : J 5)
This taxon has a very webbed toes, leaving 1 free phalanx on the inner side and the outer side of the 4th toes, the presence of a dark interocular band demarcated between the top of the head and the muzzle, a longer but not wide head with a pointed snout, prominent glandular cords (dorsal and dorsolateral folds). The Snout-Vent Length (SVL) is 40.5 to 60.1 mm in the male (♂) and 42.8 to 70.65 mm in the female (♀).

Ptychadena pumilio (Boulenger, 1920) (Figure 2 : J 6)
Characterized by small pediculated webs, 3 to 4 pairs of distinct dorsal folds, a dark spot at the shoulder, two vocal sacs by side in sub-terminal position. The Snout-Vent Length (SVL) is 35.9 to 49.2 mm in the male (♂) and 40.2 to 65.15 mm in the female (♀).

Family Pyxicephaliidae Bonaparte, 1850
Genus Aubria Boulenger, 1917

*Aubria subsigillata* (Dumeril, 1856) (Figure 2 : K)
The presence of two rounded femoral glands in an intermediate position between the knee and the cloaca, the translucent belly with round whitish spots are the characteristics of this species. The Snout-Vent Length (SVL) is 70.8 to 78 mm in the male (♂) and 71.6 to 81.7 mm in the female (♀).

CONCLUSION

The Anuran surveyed in the three agro-industrial zones made it possible to identify 28 species divided into 12 genus belonging to 10 families. The family Ptychadenidae is the most diversified with 6 species. They are followed by Hyperoliidae and Phrynobatrachidae both having 5 species each. Arthroleptidae and Bufonidae comprising of 4 species and 3 species respectively. Dicroglossidae, Hemisotidae, Pipidae, Pyxicephaliidae and Ranidae are the least diversified with one (1) specie each. Three unidentified species have also been inventoried: *Artroleptis sp*, *Sclerophrys sp* and *Phrynobatrachus sp*.

ACKNOWLEDGEMENT

Our profound gratitude goes to Mr GUEYE Paul and Mr OUNGBE Franck for their contribution to the capture of Anuran in the three agro-industrial zones of South-East Côte d'Ivoire.

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