# SOME DATA ABOUT THE FOOD COMPOSITION OF AMPHIBIANS IN CAO LANH DISTRICT, DONG THAP PROVINCE

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**Abstract**

*On the rice field ecosystem in Cao Lanh district, Dong Thap province, six species of amphibians were found: Duttaphrynus melanostictus, Kaloula pulchra and Polypedates mutus with the most diversity of feed ingredients; Fejervarya limnocharis, Hoplobatrachus rugulosus and Ichthyophis bannanicus of less food diversity; Scolopendomorpha and Polydesmoidea of the least, accounting for 1.2%. Amphibians have the most food frequency in Coleoptera, followed by Hymenoptera and Orthoptera. Amphibians are usually terrestrial, eating mainly insects. The frequency of pests was lowest in the period from sowing seeds until the rice had 3 leaves germinated, the lowest in the period of yellow rice until after harvest, the highest at the stage of rice with milk in the grain to the stage of green - ripened rice. The frequency of encounters of Hoplobatrachus rugulosus and Fejervarya limnocharis is lowest at the stage of seeding until rice germination, decrease gradually in the period of ripe rice until after harvest. The stage 4 (Rice with milk in the grain until green ripening) has the highest frequency; stage 1 is of the lowest frequency of encountering amphibians and pests; the frequency increases gradually to stage 2 and peaks at stage 4, decreasing at stage 5.*

**Keywords:** *Amphibians, food composition, pests in rice, species composition.*

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# DẪN LIỆU VỀ THÀNH PHẦN THỨC ĂN CỦA MỘT SỐ LOÀI LƯỠNG CƯ Ở HUYỆN CAO LÃNH, TỈNH ĐỒNG THÁP

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**Tóm tắt**

*Trên hệ sinh thái ruộng lúa tại huyện Cao Lãnh, tỉnh Đồng Tháp gồm có 6 loài lưỡng cư phân bố: Cóc nhà, Ễnh ương thường và Ếch cây mi an ma có độ đa dạng thành phần thức ăn nhất; Ngóe, Ếch đồng có độ đa dạng thức ăn ít hơn; Ếch giun có phổ thức ăn hẹp nhất; thấp nhất là nhóm Rết và nhóm Cuốn chiếu, chiếm 1,2%. Các loài lưỡng cư có tần số thức ăn thuộc bộ Cánh cứng nhiều nhất, tiếp theo là bộ Cánh màng, Cánh thẳng. Các loài lưỡng cư thường sống trên cạn ăn côn trùng là chủ yếu. Tần số gặp sâu hại thấp nhất ở giai đoạn lúa gieo xạ hạt đến lúc lúa nảy mầm 3 lá, giảm thấp nhất ở giai đoạn lúa chín vàng đến sau thu hoạch, cao nhất ở giai đoạn lúa có sữa trong hạt lúa đến chín xanh. Tần số gặp của Ếch đồng và Ngóe thấp nhất ở giai đoạn gieo xạ hạt đến lúc lúa nảy mầm và giảm dần ở giai đoạn lúa chín vàng đến sau thu hoạch, ở giai đoạn 4 (Lúa có sữa trong hạt lúa đến chín xanh) có tần số gặp cao nhất. Giai đoạn 1 có tần số gặp lưỡng cư và sâu hại thấp nhất, tần số gặp tăng dần đến giai đoạn 2 và tăng cao nhất ở giai đoạn 4 và giảm dần ở giai đoạn 5.*

**Từ khóa:** *Dịch hại trên lúa, lưỡng cư, thành phần loài, thành phần thức ăn.*

## 1. Introduction

Amphibians web the chain and food of agro - ecosystems. It is an essential natural enemy of the vertebrate group, helping to destroy or control the occurrence of pests in the field. Cao Lanh district in Dong Thap province has a large area of rice cultivation, playing an essential role in food security and local socio - economic development. It is necessary to apply biological fighting measures to improve the efficiency of rice production in the direction of producing clean rice to meet export requirements. Protecting natural enemies are amphibians in the field. Therefore, we approach: "Survey on food composition of amphibians in rice field ecosystem in Cao Lanh district, Dong Thap province". The topic provides a scientific Obasis in pest management, protection of natural enemies, contributing to higher efficiency in rice production. A part of the data from the surveys was initially compiled in this article.

## 2. Time, place and research methods

Collected amphibian specimens took place from September 2020 to March 2022 of 6 surveys. The survey site belongs to 5 communes of Cao Lanh district. These communes have a large area of agricultural land, in which rice is the main crop, including: Gao Giong, My Hiep, My Xuong, Phuong Thinh, Ba Sao. Specimens were collected by hand in conjunction with the use of rackets and hooks. Specimens were collected mainly at night, from 6pm to 10pm. Each species only used 5-15 individuals in one sampling site for feed composition analysis. During specimen collection, the species activity, breeding, and feeding areas will be observed… In addition, they also guide the method of handling and preserving specimens for people who often go to look for amphibians and ask them to collect specimens. Steps are done by observing specimens, taking photos, recording information, and then preserving specimens in iron cages, alcohol $90^0$, formalin 4-5%. Large amphibians before immersion are often slashed along the abdomen to allow chemicals to penetrate into the internal organs or inject chemical solution directly into the abdomen, muscle. After analyzing the food composition, the specimens will be preserved in formalin 5-10%. In addition, conducting surveys to determine the habitat of the species (soil, water, temperature, humidity, light, canal flow rate, plants and animals around the species habitat...), the time the species is normally active. Classification based on documents by authors (Thai, 2010; Nguyen, 2003; Le, 2009; Tran & Tran, 2003; Tran & Tran, 2005; Le, 2014; Nguyen, 2006).

Determination of nutritional characteristics: Weigh the food in your stomach, determination of feed ingredients based on reference to published documents, Unidentified or suspect feed samples should be stored in formalin 5% and alcohol 700 then bring it back to the lab for analysis. Determining the frequency of food encounters is based on the number of stomachs with food samples in the total number of study stomachs, and the frequency of food encounters is based on the frequency of sample collection with food samples on the total number of samples collected (As announced by authors (Pham & Le, 2012; Cao et al., 2012).

Observation and interview: The process of observing and interviewing is combined with color images of the species. Interviews are with common, large and recognizable species, species with food value such as field frogs, house toads. The main form of interview is by direct question and answer, interview on species composition, distribution characteristics, stomach food, behavior and ecological characteristics of the species. Interviewees including evening frogmen, farmers are often attached to the fields, people often butchers frogs and toads. The collected specimens are stored at the animal practice room, Faculty of Natural Science pedagogy, Dong Thap University.

## 3. Research results

### 3.1. Ecological features of amphibians

*3.1.1. Black - spined toad (Duttaphrynus melanostictus)*

Describe: Common species. Large size (L > 50mm). The parotid gland is large bean - shaped. Orbital margin – tympanic membrane visible, develops from snout through eye to parotid gland, there is a black edge on the top. The eardrum is approximately 2/3 the diameter of the eye. Free fingers. Finger I is longer than finger II. 1/3 of the toe has webbed. The back has many alternating acne. The tip of the acne granule is usually black; Dark yellow, dark gray or dark gray skin.

Ecological characteristics: Commonly found species foraging along the banks of ditches, bushes or along paths in the fields. Species usually hide in the dark corners of the cave, species hiding in burrows from 2 - 3 individuals when the ambient temperature is low. They are active in warm weather. They usually feed during the day in humid places. Food includes spiders, mosquitoes, ants, termites, bugs, cockroaches, flies, earthworms, insects belonging to Coleoptera. Eggs are dark black, followed by a long line of sticky mucus in the water. About a week the eggs hatch into tadpoles.

*3.1.2. Banded bullfrog (Kaloula pulchra)*

Describe: Common species. Medium sized species (35-50mm). The head is wider than long. The mouth is narrower than the head is wide. Round mouth. Hidden eardrum. Their body is a bit fat and grows back. The interocular area has a light yellow stripe running across. Behind the eyes, there are 2 light yellow bands running intermittently running down the back to the base of the thighs. Each side has a light brown stripe running from the back of the eye to the front of the thigh. Free finger, tip of obtuse finger. Short legs, 1/3 toes have webbed skin. The surface of the body secretes a white viscous fluid. The back is smooth, with a large brown streak running along each side. Light gray belly.

Ecological characteristics: Bullfrogs live in places with high humidity or near water sources such as dark, damp corners, hiding among dead leaves. The species feed during the day, but active at night. Food includes mosquitoes, flies, millipedes, beetles, cockroaches… They defend themselves by inhaling air to inflate their abdomens to intimidate predators and help them move easily through the water.

*3.1.3. Grass frog (Fejervarya limnocharis)*

Describe: Medium size. The color of the back changes according to the living environment. Some individuals have an opaque white line running down their back. The back has many short broken skin folds. Adult toes are smaller than adult copper frogs. 2/3 of the toe has a swimming membrane. Males have a genital bottle on toe I and a dark gray vocal pouch on each side of the throat.

Ecological characteristics: The species usually lives in still water or in bushes with moist soil. Nocturnal feeding, during the day often hide in crevices in the rock or hide in burrows available in the wild. They often forage and reproduce strongly after the rain. Food includes dragonflies, crickets, butterflies, flies, grasshoppers, locusts, caterpillars, brown planthoppers... Eggs are laid in clusters that float to the surface of the water.

*3.1.4. Common lowland frog (Hoplobatrachus rugulosus)*

Describe: Common species. Large size. Round mouth. The tympanic membrane is approximately eye diameter. Skin folds on the tympanic membrane are evident. There are upper molars, cane leaves touching the anterior edge of the inner nostril. Free finger, obtuse thumb sucking. 2/3 of the toe has a webbed, no external tubercle. There are many short intermittent folds of skin on the back. The ribs and back have nodules of different sizes. Males have a pair of dark gray vocal sacs under their throats on each side. The color of the dorsal surface changes according to the habitat, can be light gray, yellowish gray, brownish gray. Gray white belly. The hind limbs have light gray horizontal streaks.

Ecological characteristics: Common lowland frog lives in rice fields, ditches, and fields. The habitat of the species is close to a water source or in a humid place. They feed at night. During the day, they hide in dark burrows or works in damp or dark corners of rice fields from the flowering stage to the golden ripening stage. Food includes mosquitoes, grasshoppers, locusts, crickets, dragonflies, butterflies, earthworms, young caterpillars, rice planthoppers… Copper frogs move fast, actively forage, eat prey in a dynamic and static state. They usually lay eggs after the rain. Males and females mate for fertilization during the breeding season. They give birth to 2 - 3 litters per year. Eggs gather in mass to help the egg sac float to the surface of the water. Tadpoles grow in water for a short time and then shrivel up to land to become a young frog.

*3.1.5. Myanmar tree frog (Polypedates mutus)*

Describe: Common species. Large size, female: 60-95mm, male: 50-75mm. Head longer than wide. The muzzle has a sharp angle, the end of the mouth is obtuse, the edge of the mouth is clear. Tongue broad, posterior margin free and bisected. The teeth of the cane touch the anterior edge of the inner nostril. Cheeks slightly concave. The nostrils are closer to the snout than to the eyes. The space of the nose is close to the space of the eyes and the upper eyelid

is wide. The red - brown tympanic membrane has a bright border around it, the diameter of the tympanic membrane is approximately 2/3 of the eye diameter. Skin folds over the tympanic membrane are evident. Fingers are long, finger I is longer than finger II, the sucker expands into a small disc. The legs are long, the tibial joints of the ankles touch the mouth. 1/3 of the toe has a swimming membrane. The toe sucker extends into a flat disc, the toe disc has a horizontal groove dividing it into the upper and lower halves. The subarticular tubercle is prominent, the inner tubercle of the leg is oval, the outer tubercle is not clear. Dorsal and flank folds are not developed; Dorsal smooth, gray-brown or dark gray. Ribs have small seeds. Abdomen smooth, milky white, scattered gray-brown spots on chest area. On the limbs there are light brown horizontal streaks, under the thighs there are nodules in Acne bran area. Males have dark gray vocal pouches on each side of their throats.

Ecological characteristics: Guenther's Amoy frog is nocturnal, hiding during the day in the burrows of shrubs around the water. They lives in places with high humidity in bushes, high - covered orchards, burrows available in the wild. Food includes butterflies, brown planthoppers, locusts, grasshoppers, caterpillars, flies, mosquitoes.

*3.1.6. Bannan caecilian (Ichthyophis bannanicus)*

Describe: Rare species of large worm-shaped body; head small, slightly flattened; small eyes and no eyelids; mouth with well - defined jaws. The skin is smooth, the back is dark brown, the belly is lighter than the back. Each side of the body has a strip of saffron yellow from the corner of the jaw to the tail.

Ecological characteristics: Bannan caecilian lives in moist soil and near water sources. The way to move to feed forms a hiding hole with a depth of 25 to 50cm. It eats termites, small molluscs, earthworms, small and medium sized insects. Forage species are usually active in soil or near still water sources. After laying eggs, the eggs will be rolled up to incubate.

**3.2. Food composition of amphibians**

After collecting samples, analyzed 136 individuals of six species of amphibians were found in the rice field ecosystem in Cao Lanh district, Dong Thap province, including: *Duttaphrynus melanostictus*, *Kaloula pulchra*, *Fejervarya limnocharis*, *Hoplobatrachus rugulosus*, *Polypedates mutus*, *Ichthyophis bannanicus*. In which *Fejervarya limnocharis* and *Hoplobatrachus rugulosus* have the largest number of species. The obtained data are listed in tables 1 and 2.

*3.2.1. Number of stomachs analyzing food*

According to table 1: The number of stomachs containing the most food is *Fejervarya limnocharis* (39/50 stomachs with food, accounting for 78%), next is *Hoplobatrachus rugulosus* (77.78%); *Ichthyophis bannanicus* (75%); *Kaloula pulchra* (72.73%); *Duttaphrynus melanostictus* (71.43%); *Hylarana guentheri* has the least number of stomachs containing food (77.78%). The number of stomachs without food may be due to the food being digested or at the time of encountering the species that have not yet forage, or because there is little food available.

**Table 1. Number of stomachs analyzed for food**

| No. | Species name | Have food | No food | Total (%) |
|---|---|---|---|---|
| 1 | *Duttaphrynus melanostictus* | 5 (71.43%) | 2 (28.57%) | 7 |
| 2 | *Kaloula pulchra* | 8 (72.73%) | 3 (27.27%) | 11 |
| 3 | *Fejervarya limnocharis* | 39 (78%) | 11 (22%) | 50 |
| 4 | *Hoplobatrachus rugulosus* | 42 (77.78%) | 12 (22.22%) | 54 |
| 5 | *Polypedates mutus* | 4 (66.67%) | 2 (33.33%) | 6 |
| 6 | *Ichthyophis bannanicus* | 6 (75%) | 2 (25%) | 8 |

*3.2.2. Food composition of some amphibians in Cao Lanh district*

From the aggregated results in table 2, it shows that *Duttaphrynus melanostictus, Kaloula pulchra* and *Polypedates mutus* have the highest diversity of food ingredients (16 types of food, accounting for 88.9%); *Fejervarya limnocharis* and *Hoplobatrachus rugulosus* have less food diversity (15 types of food, accounting for 83.3%); *Ichthyophis bannanicus* have the narrowest food spectrum (12 types of food, accounting for 66.7%).

Consider the frequency of food encounters of amphibians: The amphibians with the most frequency of food belong to Coleoptera, next is Hymenoptera, Orthoptera. Species include: Toadstools, Bullfrogs, Rare Mollusks and Crustaceans. *Fejervarya limnocharis* and *Hoplobatrachus rugulosus* do not eat Centipedes, Tapiocaworms and Termites. Some species included: *Duttaphrynus melanostictus*, *Kaloula pulchra* and *Polypedates mutus* are usually not found in Molluscs and Crustaceans. *Fejervarya limnocharis* and *Hoplobatrachus rugulosus* do not eat Centipedes, Millipedes and Termites. The food of *Ichthyophis bannanicus* does not have Diptare, Orthoptera, Homoptera, Big Spider, Odonata and Scolopendomorpha. From that, it was found that amphibians living on land often eat insects mainly (Table 2).

**Table 2. Food composition of some amphibian species in Cao Lanh district**

| No. | List food | *Hoplobatrachus rugulosus* (7) % | | *Kaloula pulchra* (11) % | | *Fejervarya limnocharis* (50) % | | *Hoplobatrachus rugulosus* (54) % | | *Polypedates mutus* (6) % | | *Ichthyophis bannanicus* (8) % | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P1 | P2 | P1 | P2 | P1 | P2 | P1 | P2 | P1 | P2 | P1 | P2 |
| 1 | Hymenoptera | 64.5 | 16.2 | 73.2 | 13.9 | 74.3 | 24.8 | 76.9 | 29.8 | 78.1 | 18.3 | 1.2 | 0.2 |
| 2 | Hemiptera | 7.4 | 3.1 | 8.2 | 3.8 | 8.6 | 3.1 | 8.9 | 4.7 | 9.6 | 4.3 | 1.1 | 0.1 |
| 3 | Coleoptera | 68.4 | 21.6 | 75.6 | 27.8 | 85.5 | 21.6 | 87.8 | 32.8 | 87.6 | 30.7 | 3.5 | 0.8 |
| 4 | Lepidoptera | 16.4 | 8.1 | 23.4 | 10.4 | 26.7 | 8.1 | 30.7 | 11.8 | 14.9 | 8.6 | 1.5 | 0.2 |
| 5 | Orthoptera | 31.8 | 14.8 | 35.6 | 15.7 | 42.7 | 14.8 | 32.9 | 14.8 | 45.8 | 21.4 | 0 | 0 |
| 6 | Diptare | 20.3 | 7.5 | 16.7 | 89 | 29.7 | 7.5 | 34.5 | 9.7 | 32.7 | 9.8 | 0 | 0 |
| 7 | Homoptera | 21.3 | 6.5 | 18.5 | 78 | 24.7 | 8.9 | 31.3 | 9.9 | 19.8 | 4.9 | 0 | 0 |
| 8 | Big spider | 10.6 | 5.9 | 4.85 | 33 | 11.9 | 3.21 | 12.6 | 3.93 | 9.8 | 4.7 | 0 | 0 |
| 9 | Scolopendomorpha | 1.2 | 0.1 | 2.2 | 0.2 | 0 | 0 | 0 | 0 | 2.6 | 0.6 | 0 | 0 |
| 10 | Mollusca | 0 | 0 | 0 | 0 | 2.86 | 1.02 | 4.79 | 2.14 | 0 | 0 | 1.3 | 0.2 |
| 11 | Annelida | 5.32 | 1.8 | 3.32 | 12 | 2.87 | 0.9 | 3.42 | 1.3 | 2.04 | 1.1 | 25 | 1.8 |
| 12 | Crustacean | 0 | 0 | 0 | 0 | 24.3 | 10.3 | 27.5 | 12.3 | 0 | 0 | 2.8 | 1.0 |
| 13 | Odonata | 23.2 | 11.5 | 27.4 | 14.7 | 41.5 | 18.5 | 49.4 | 19.9 | 31.4 | 12.3 | 0 | 0 |
| 14 | Blattoptera | 6.73 | 2.7 | 4.96 | 1.8 | 2.13 | 1.02 | 5.67 | 2.8 | 7.65 | 2.8 | 8.3 | 3.4 |
| 15 | Polydesmoidea | 1.2 | 0.1 | 2.1 | 0.2 | 0 | 0 | 0 | 0 | 1.5 | 0.1 | 1.1 | 0.1 |
| 16 | Planta | 5.72 | 3.1 | 4.69 | 3.4 | 6.81 | 2.8 | 7.49 | 3.6 | 6.48 | 2.8 | 2.9 | 1.1 |
| 17 | Isoptera | 8.12 | 3.5 | 9.11 | 3.7 | 0 | 0 | 0 | 0 | 3.98 | 2.3 | 43 | 21 |
| 18 | Other insects | 8.78 | 2.45 | 7.57 | 2.63 | 10.5 | 2.68 | 14.9 | 5.23 | 9.69 | 3.26 | 4.9 | 1.7 |
| | Total | 16 (88.9) | | 16 (88.9) | | 15 (83.3) | | 15 (83.3) | | 16 (88.9) | | 12 (66.7) | |

*3.2.3. The relationship between amphibians and pests in the rice field ecosystem in the autumn - winter crop*

The growth period of rice is divided into 5 stages (Table 3): Stage I - From the beginning of planting to the time the rice sprouts 3 leaves; Stage II - Rice before flowering; Stage III - The rice is flowering; Stage IV - Rice with milk in the grain grows to green ripe; Stage V - Golden ripe rice comes after harvest.

From the summary results in table 3 on the frequency of pests and diseases of rice: The frequency of pests was lowest in the period from seeding to 3 - leaf germination, and the lowest in the period of ripe rice until after harvest. The frequency of pests encountered in these two stages is lowest because in the sowing stage, there are limited sources of food and shelter, temperature and humidity of the environment are often unfavorable for the survival of rice pests. The frequency of encountering pests of *Hoplobatrachus rugulosus* and *Fejervarya limnocharis* was highest in the stage of milky rice in the rice grain to green ripening. During this period, there are many preferred foods for pests, and the habitat, temperature and humidity are very favorable for the nutritional and reproductive activities of the pests.

**Table 3. Frequency of encounters between *Fejervarya limnocharis*, *Hoplobatrachus rugulosus* and pests in the ecosystem of rice fields in the autumn - winter season in Cao Lanh district, Dong Thap province**

| Ingredient | | Rice growth stages | | | | |
|---|---|---|---|---|---|---|
| | | Stage I - From sowing to the time when the rice sprouts 3 leaves | Stage II - Rice before flowering | Stage III - The flowering period of rice | Stage IV - Rice has milk in the grain until it is green | Stage V - Rice is ripe until harvest time |
| *Hoplobatrachus rugulosus* | TSG | 0-0.06 | 0.06 - 0.53 | 0.65 - 0.94 | 0.94 - 0.97 | 0.43 - 0.52 |
| | TB | 0.03 | 0.3 | 0.8 | 0.95 | 0.47 |
| | % | 0.06 | 0.56 | 1.4 | 1.77 | 0.87 |
| Pests | TSG | 1.25 - 5.67 | 6.02 - 11.32 | 12.82 - 18.21 | 18.24 - 18.36 | 7.05 - 8.98 |
| | TB | 3.51 | 8.67 | 15.52 | 18.3 | 8.02 |
| | % | 6.38 | 15.76 | 28.22 | 33.27 | 14.58 |
| *Fejervarya limnocharis* | TSG | 0.01-0.06 | 0.07 - 0.25 | 0.3 - 0.67 | 0.69 - 0.97 | 0.41 - 0.63 |
| | TB | 0.035 | 0.16 | 0,5 | 0.83 | 0.52 |
| | % | 0.07 | 0.32 | 1 | 1.66 | 1.04 |
| Pests | TSG | 1.02 - 4.35 | 5.11 - 10.84 | 1187-1798 | 18.43 - 19.01 | 8.19 - 9.12 |
| | TB | 2.69 | 7.98 | 14.93 | 18.72 | 8.66 |
| | % | 4.14 | 12.28 | 22.97 | 28.8 | 13.32 |

From the combined results in Table 3 on the frequency of *Hoplobatrachus rugulosus* and *Fejervarya limnocharis*, the frequency of encounters was lowest at the stage of seed sowing until rice germination and gradually decreased at the stage of rice ripening until after harvest. This frequency of encounters is explained by the fact that the main food source of amphibians, insects, has decreased. For example, at stage 1, the brown planthopper species has not appeared, by stage 5, the brown planthopper has grown wings and migrated. In these two stages, there are living conditions for *Hoplobatrachus rugulosus* and *Fejervarya limnocharis* in terms of humidity and temperature is unfavorable, so the frequency of encountering the species is reduced. The frequency of encounters of *Hoplobatrachus rugulosus* and *Fejervarya limnocharis* increases gradually from stage 1 to stage 4. The 4$^{th}$ stage has the highest frequency (the stage of rice with milk in the rice grain to green ripe). This frequency is explained by the fact that during the period of rice with milk in the grain until green, there are often rich and diverse food sources and favorable living conditions for the species.

From the analysis of the relationship between amphibians and pests in the rice field ecosystem in Cao Lanh district, Dong Thap province, it is found that there is a relationship in the density changes between amphibians and pests according to the stages of development. Rice plants are as follows: Stage 1 has the lowest frequency of amphibian and pest encounters. The frequency gradually increases until stage 2, with the highest increase in stage 4 and gradually decreases in stage 5. Amphibians and pests are endothermic animals, their life activities including nutritional and reproductive activities depend not only on food sources but also on humidity, temperature and light. Therefore, in pest control to protect crops, it is necessary to have measures to preserve and develop amphibians in the fields.

## 4. Conclusions and recommendations

In the rice field ecosystem in Cao Lanh district, Dong Thap province, six species of amphibians were found, of which *Hoplobatrachus rugulosus* and *Fejervarya limnocharis* have the largest number of species. *Duttaphrynus melanostictus*, *Kaloula pulchra*, *Hylarana guentheri* have the highest food ingredient diversity; *Hoplobatrachus rugulosus* and *Fejervarya limnocharis* have less food diversity; *Ichthyophis bannanicus* has the narrowest food

spectrum. Amphibians have the highest food frequency in Coleoptera, followed by Hymenoptera and Orthoptera. Amphibians usually live on land and eat insects.

The frequency of encountering pests is lowest from the stage of rice sowing until the rice sprouts 3 leaves. The lowest decrease is from the stage of yellow rice to post - harvest, the highest is from the stage of rice with milk in the rice grain to the time of green ripe rice. The frequency of encountering *Hoplobatrachus rugulosus* and *Fejervarya limnocharis* is lowest from the seed sowing stage until the rice germinates and gradually decreases from the golden ripe rice stage to the time of harvest, gradually increase to stage 4 (Rice has milk in the grain until the rice is green and ripe) has the highest frequency.

Stage 1 has the lowest frequency of encountering amphibians and pests, gradually increasing to stage 2. The highest increase is in stage 4 and gradually decreases in stage 5. Amphibians and pests are all endothermic animals, their life activities including nutritional activities and reproductive activities depend not only on food sources but also on humidity, temperature and light. Therefore, in pest control to protect crops, it is necessary to have measures to preserve and develop amphibians in the fields.

Research results show the important role of amphibians in destroying rice pests, contributing to crop protection. Amphibians are beneficial natural enemies of the rice field ecosystem, but are also a group of organisms whose living activities depend quite clearly on the habitat.

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