Classification of Animal Cookies, Animal Crackers, and Related Taxa

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While I was a biology graduate student during the late 1970s, I wrote the following essay on a typewriter in response to repeated questions as to whether the snacks on my desk were animal cookies or animal crackers. About two decades later, I converted the original version into an html (webpage) file with color images. Finally, I converted my essay into a pdf file, with minor wordsmithing and changes in format, but the text is otherwise intact from its earliest form. I hope you enjoy it in good humor and good health.

Introduction

Animal cookies, animal crackers, and related taxa are known to most people in the United States. However, there is substantial confusion as to which of the baked critters are cookies and which are crackers. It has been my purpose to examine a wide variety of these snacks from throughout the United States and to develop an initial scientific classification system for the group. There likely are additional taxa that remain to be described, but this classification scheme attempts to answer some fundamental questions and provide a foundation for future studies.

Methods

Collection and Preparation of Specimens

Specimens were collected by the author and by students, alumni, and faculty of the Department of Biological Sciences at Fort Hays State University, Hays, Kansas. I am grateful for their thoughtful assistance. The specimens were collected by hand without the use of any special devices. It should be noted, however, that collection fees had to be paid from private funds by the collectors at each collection site.

Voucher specimens were preserved by the application of clear, acrylic, aerosol sealer, as can be obtained in most arts-and-crafts stores. Specimens were then placed in glass jars to limit their exposure to harmful airborne agents of decomposition. All voucher specimens are stored in the author's personal collection. All photographs were taken by the author.

Taxonomic Criteria

Each species is comprised of a number of recognizable morphs that represent identifiable organisms in the Kingdom Animalia. For this study, the elephant morph was used in keys and descriptions, because it was the only shape common to all the species identified.

Individuals of these taxa are essentially two-dimensional. They have a flattened surface that results from their orientation on a flat surface when created. Opposite this is

the sculptured surface, which is typically marked with grooves, ridges, dimples, or combinations of these features. Grooves and ridges provide detail to each morph. Dimples are small, circular depressions that commonly represent eyes on individuals of some taxa; however, their presence elsewhere on the body is an important diagnostic feature of some species. Icing or frosting in some taxa obscure these markings.

Three measurements were made of the specimens: length, height, and thickness. To determine the first two measurements, it is necessary to imagine a straight-line tangent to two points at the base of the specimen. This line can be visualized by "standing" the specimen in an upright position on a table. Generally, a forefoot and a hindfoot provide these points of tangency. Along this line, imagine two perpendicular lines, one at each end of the specimen and tangent to the extreme points on those ends (Figure 1). The length is the distance between these parallel lines. A fourth line, parallel to the first line, at the greatest distance from the first, and tangent to the edge of the specimen, delimits the height of the individual (Figure 1). Thickness is the greatest distance through the individual from the sculptured side to the flattened side on a line roughly perpendicular to the general plane of each side. In this study, these measurements were made with a metric caliper.

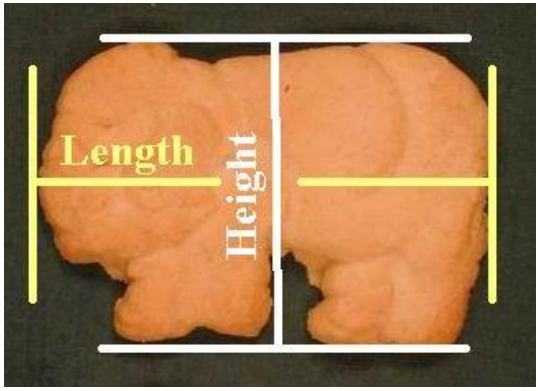

Figure 1. Height and length of a typical specimen.

Some of the ingredients listed on the packages inhabited by the specimens were useful taxonomic features. The presence or absence of particular ingredients and the sequence of ingredients, which indicates the relative proportions of each ingredient, were noted in this study.

Crackers and cookies were viewed as distinct types of snacks in this account. In true crackers (such as saltine crackers), fats and oils are more abundant than sugar and other sweeteners, which usually are not near the top of the ingredient list as they are in true cookies (e.g., chocolate chip cookies). Additionally, true crackers typically have a lighter texture than true cookies. Most people should be able to readily discern similar attributes when they eat specimens of each of the described taxa. It was on this basis that the common names "animal cookie" and "animal cracker" were assigned to taxa described in this study.

Results

Systematic accounts are provided for one proposed family, one proposed genus, and eight proposed species within the following taxonomic hierarchy:

Kingdom: Pseudobiotae
Phylum: Consuma
Class: Snacka
Order: Animales.

Following these systematic accounts is a dichotomous key to the eight named species. Color images of each species are grouped on two plates for easier comparison.

Family: Animalaceae *fam. nov.*

- **Type genus:** *Animalum*
- **Descriptors:** Individuals are edible cookies and crackers that resemble members of the Phylum Chordata. Mammals are the most common morphs, but fish, birds, and reptiles are known.
- **Discussion:** This is a widespread family occurring in most food stores in the United States. The use of only two common names (animal cookies and animal crackers) is a misleading oversimplification of this family's diversity.

Genus: *Animalum* gen. nov.

- **Type species:** *Animalum cookium*
- **Descriptors:** In addition to the family characteristics, individuals might contain lemon oil, honey, cocoa, or other mild flavoring agents, but none dominate the taste as do the exotic flavors (e.g., cheese, garlic, ginger, and green onion) present in other genera. Typically, individuals of most species are tan in color, but a few exceptions are known. Members of this genus typically inhabit cardboard boxes with wax paper or plastic liners, plastic bags, and paper bags.

Species: *Animalum cookium* sp. nov.; Plate 1, Figure 2

- **Recommended common name:** Animal Cookie
- **Descriptors:** No dimples present other than the eye. External markings (grooves) relatively detailed. Ingredients do not include calcium phosphate, but occasionally contain cocoa derivatives.
- **Dimensions:** Elephant morph thickness 5.5–7.0 mm, length 36–46 mm, height 30–40 mm.
- **Diagnosis:** *Animalum crackerum* has one superfluous dimple in addition to the eye, and they are thicker (7.0–7.5 mm). *Animalum intermedium* has one superfluous dimple in addition to the eye and includes calcium phosphate as an ingredient. *Animal minutum* is much shorter in length and height. *Animal naturalum* does not include refined sugar. *Animalum frostedcookium*, *Animalum icedintermedium*, and *Animalum icedcookium* normally are coated with frosting or icing.
- **Discussion:** All the taxa are delicious, but these are the author's favorites.

Species: *Animalum crackerum* sp. nov.; Plate 1, Figure 3

- **Recommended common name:** Animal Cracker
- **Descriptors:** One superfluous dimple, in addition to the eye, present near the center of the body. External markings (grooves) not detailed. Ingredients might include calcium phosphate. Occasionally, populations whose individuals contain cocoa derivatives are encountered.
- **Dimensions:** Elephant morph thickness 7.0–7.5 mm, length 35–39 mm (49.5 mm in one population), height 35–39 mm (28.5 mm in one population).
- **Diagnosis:** *Animalum cookium* has no superfluous dimples and is thinner (5.5–7.0 mm). *Animalum crackerum* is normally thinner (6–7 mm) and longer (41–44 mm). *Animalum minutum* is much shorter in length and height. *Animal naturalum* does not include refined sugar. *Animalum frostedcookium*, *Animalum icedintermedium*, and *Animalum icedcookium* normally are coated with frosting or icing.
- **Discussion:** These individuals should be referred to as animal crackers to conserve the long-used common name, even though they are not true crackers. The relative lack of detail and the "inflated" structure that results from relatively large air pockets give them an appearance similar to true crackers.

Species: *Animalum intermedium* sp. nov.; Plate 1, Figure 4

- **Recommended common name:** Intermediate Animal Cookie
- **Descriptors:** One dimple in addition to the eye present near the center of the body. External markings (grooves) moderately detailed. Ingredients include calcium phosphate.
- **Dimensions:** Elephant morph thickness 6–7 mm, length 41–44 mm, height 28–37 mm.
- **Diagnosis:** *Animalum cookium* has no superfluous dimples in addition to the eye and does not include calcium phosphate. *Animalum crackerum* is normally thicker (7.0–7.5 mm) and shorter (35–39 mm) or rarely longer (49.5 mm). *Animalum minutum* is much shorter in length and height. *Animal naturalum* does not include refined sugar. *Animalum frostedcookium*, *Animalum icedintermedium*, and *Animalum icedcookium* normally are coated with frosting or icing.
- **Discussion:** This species shares characteristics with animal cookies and animal crackers, but is sufficiently distinct to warrant recognition as a species.

Species: *Animalum minutum* sp. nov.; Plate 2, Figure 5

- **Recommended common name:** Miniature Animal Cookie
- **Descriptors:** One dimple in addition to the eye might be present on the sculptured side. Corn syrup listed second among ingredients. Some individuals contain cocoa and are chocolate brown rather than tan in color.
- **Dimensions:** Elephant morph thickness 6–7 mm, length 32.5–33.5 mm, height 23.5–24.5 mm.
- **Diagnosis:** Elephant morphs of other species have height and length dimensions greater than 28 mm and 35 mm, respectively.
- **Discussion:** If you are one of those people who really enjoys eating the unattached appendages that break off full-sized animal cookies, then you will probably enjoy this tiny species.

Species: *Animalum naturalum* sp. nov.; Plate 2, Figure 6

- **Recommended common name:** Natural Animal Cookie
- **Descriptors:** Ingredients do not include refined sugar or preservatives. Color is light brown, rather than tan, due to inclusion of unbleached flour and possibly molasses as ingredients.
- **Dimensions:** Elephant morph thickness 4–5 mm, length 41–42 mm, height 29–30 mm.
- **Diagnosis:** Other species contain refined sugar. Elephant morphs of other species are more than 5.5 mm thick.
- **Discussion:** This species is often associated with health food stores or similar environments.

Species: *Animalum frostedcookium* sp. nov.; Plate 2, Figure 7

- **Recommended common name:** Frosted Animal Cookie
- **Descriptors:** Body covered on all sides with thick, pinkish-red or white frosting that often has numerous colored spheres embedded in it. Without frosting, individuals are similar to members of the species *Animalum cookium*.
- **Dimensions:** Elephant morph thickness 7–8 mm, length 35–41 mm, height 35–41 mm.
- **Diagnosis:** This is the only species currently known that has all of its body surfaces normally covered by frosting. *Animalum icedintermedium* has thin icing only on the top surface. *Animalum icedcookium* typically has frosting only on the sculptured surface and has details on the sculptured surface marked with ridges, rather than grooves.
- **Discussion:** Although this species might be closely related to *Animalum cookium*, the presence of a frosted covering appears to be an effective isolating mechanism.

Species: *Animalum icedintermedium* sp. nov.; Plate 2, Figure 8

- **Recommended common name:** Iced Intermediate Animal Cookie
- **Descriptors:** Body covered on top side with pink or white icing. Without frosting, individuals are similar to members of species *Animalum intermedium*.
- **Dimensions:** Elephant morph thickness 7–8 mm, length 35–41 mm, height 35–41 mm.
- **Diagnosis:** This species is one of only three known to have icing or frosting. It is most easily distinguished from *Animalum frostedcookium* in that *Animalum icedintermedium* only has thin icing on the top surface rather than the thick frosting on all surfaces of *Animalum frostedcookium*. *Animalum icedcookium* typically has icing on a surface with details marked by ridges rather than grooves.
- **Discussion:** Although this species might be closely related to *Animalum intermedium*, the presence of icing appears to be an effective isolating mechanism. Although icing also is present on the otherwise distinctive *Animalum icedcookium*, it seems likely that this feature evolved independently in each group.

Species: *Animalum icedcookium* sp. nov.; Plate 2, Figure 9

- **Recommended common name:** Iced Animal Cookie
- **Descriptors:** Pink or white frosting normally covers the sculptured surface. Ridges, rather than grooves, mark details on the sculptured surface under the frosting.
- **Dimensions:** Elephant morph thickness 6–7 mm, length 45–55 mm, height 35–40 mm.
- **Diagnosis:** All other species have details marked by grooves rather than ridges. Only *Animalum icedintermedium* also has icing.
- **Discussion:** This is the only species known with details marked by ridges rather than grooves. The ridges serve to retain the icing, which apparently had a relatively low viscosity when deposited on the sculptured surface. Although icing also is present on *Animalum icedintermedium*, it seems likely that this feature evolved independently in each group.

Dichotomous Key to the Known Species of *Animalum*

1.	Normally covered on one or both sides with icing or frosting.	Go to 2.
1a.	Body not covered with icing or frosting.	Go to 4.
2.	Pink or white icing only on the sculptured surface of ridges or grooves.	Go to 3.
2a.	Various colors of frosting on both surfaces; markings under frosting outlined by grooves.	*Animalum frostedcookium*; Frosted Animal Cookie
3.	Markings under frosting outlined by grooves.	*Animalum icedintermedium*; Iced Intermediate Animal Cookie
3a.	Markings under frosting outlined by ridges.	*Animalum icedcookium*; Iced Animal Cookie
4.	Ingredients do not include refined sugar or preservatives; body light brown due to use of unbleached flour and molasses.	*Animalum naturalum*; Natural Animal Cookie
4a.	Ingredients include both refined sugar and preservatives; body tan due to use of bleached flour (might be light brown if over-baked) or, more rarely, chocolate brown.	Go to 5.
5.	Height of elephant morph 23.5–24.5 mm; length of elephant morph 32.5–33.5 mm; corn syrup listed second among ingredients.	*Animalum minutum*; Miniature Animal Cookie
5a.	Height of elephant morph greater than 28 mm; length of elephant morph greater than 35 mm; sugar listed second among ingredients.	Go to 6.
6.	No dimples present, except eye; external markings relatively detailed.	*Animalum cookium*; Animal Cookie
6a.	One dimple present in addition to eye, more or less in the center of the body; external markings few and not detailed to moderately detailed.	Go to 7.
7.	External markings not detailed; greatest thickness of elephant morph 7.0–7.5 mm; length of elephant morph usually 35–39 mm (in one population, length about 49.5 mm).	*Animalum crackerum*; Animal Cracker
7a.	External markings moderately detailed; greatest thickness of elephant morph typically 6.0–7.0 mm; length of elephant morph normally 41–44 mm.	*Animalum intermedium*; Intermediate Animal Cookie

Plate 1

Figure 2. *Animalum cookium*

Figure 3. *Animalum crackerum*

Figure 4. *Animalum intermedium*

Plate 2

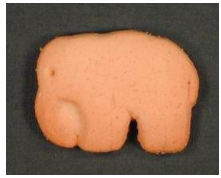

Figure 5. *Animalum minutum*

Figure 6. *Animalum naturalum*

Figure 7. *Animalum frostedcookium*

Figure 8. *Animalum icedintermedium*

Figure 9. *Animalum icedcookium*

Discussion

This preliminary survey of the members of the Pseudobiotae describes one family, one genus, and eight species commonly referred to as animal cookies and animal crackers. Other than the information presented here, no other published information is available for the group. Given the absence of previous research, it seems likely that additional taxa will be described and refinements to the current classification will be forthcoming as interest in this group spreads. In particular, I predict that additional species will be documented that are coated with icing or frosting, which is apparently a feature that has evolved independently at least three times. It is possible that the greatest likelihood is the discovery of a frosted species otherwise similar to *Animalum crackerum*, a lineage that has heretofore not been represented by any taxa coated with frosting or icing.

Members of this genus have no cellular differentiation. In fact, they have no cells, only gas vacuoles, which seem to be larger or more numerous in *Animalum crackerum* than in the other species. To date, they have exhibited virtually no behavior, although all of the species are clearly gregarious. Their mode of reproduction has not been studied. Little is known about their ecology, although all species are heavily preyed upon by humans and other animals. Some species seem to be relatively uncommon and might be in danger of extinction; thus, additional information is crucial.