CATCHABILITY, MORPHOMETRIC RELATIONSHIPS AND CHEMICAL COMPOSITION OF THE EXOTIC CRAYFISH *Procambarus clarkii* OF THE RIVER NILE AND ITS POSSIBILITY FOR EXPLOITATION IN EGYPT

Tharwat, A. A.
Department of Animal Production, Faculty of Agriculture, Cairo University, Giza, Egypt.

ABSTRACT

The exotic crayfish *Procambarus clarkii* has been successfully inhabited the river Nile in Egypt and its economic importance is becoming more apparent. Up till now, *P. clarkii* is unexploited in Egypt, so it is not subject to catch by the fishermen in the river Nile. Therefore, the present work was carried out on the catch efficiency of *P. clarkii* as catch per unit effort by the designed traps and to determine the seasonality of its relative abundance during the year. Morphometric relationships of body length and body weight with the abdominal length, carapace length, abdominal weight and skeleton and wastes weight were studied. The average of dress-out percentage (abdominal muscle %) was 15.5 \(\pm\) 1.06 and 19.0 \(\pm\) 1.04 for males and females, respectively. The chemical composition of both inedible parts (skeleton and wastes) and unmarketable crayfish were determined and evaluated to produce the crayfish meal. This study aims to manage the wild stock in the river Nile using traps and exploitation the yield in two directions: the edible part dressed-out for human consumption and the inedible part for processing crayfish meal as a source for animal diets.

Keywords: Crayfish, catchability, traps, relative abundance, morphometry, fishmeal, river Nile

INTRODUCTION

The crayfish *Procambarus clarkii* is one of the most important species of about 400 species of fresh water crayfishes in the world (Huner, 1989). Its distribution area has been expanded around the world largely from human introductions (Huner, 1977 and Huner and Avault, 1978). Over 60,000 tons of *P. clarkii* are produced annually in the USA and China (Huner et al., 1993). *P. clarkii* is a large prolific, aggressive burrower species and well adapted to survive in shallow areas with drastic seasonal fluctuations in water levels (Huner and Barr, 1983). It has also good adaptability to burrow environments, aerial exposure, polymorphism, rapid growth, high fecundity and disease resistance (Huner and Lindovist, 1995).

In Egypt, the crayfish *P. clarkii* was accidentally introduced to the river Nile during 1980’s (Ibrahim et al., 1995). Within the last few years, it has been successfully established in various sites of the river Nile and its branches, particularly in the Delta region and extended southwards to Giza Governorate (Soliman et al., 1998a). On the other hand, the crayfish *P. clarkii* most certainly became a valuable human food replacing the expensive marine crustaceans (Emam and Khalil, 1995). Some studies were carried out that dealt with various aspects of this species including their ecology (Ibrahim et
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al., 1995 and 1996), population dynamics (Emam and Khalil, 1995) and reproductive biology (Soliman et al., 1998b).

However, the economic importance of *P. clarkii* in Egypt is anticipated to increase by time. The present work was carried out on the catchability, seasonality abundance, physical morphometric relationships and chemical composition of *P. clarkii* that inhabits the river Nile. The study aims to determine and evaluate the following points:

- Traps catchability as catch per unit effort (CPUE).
- The dress-out percentage of abdominal muscle (edible part %) and its chemical composition as a human food.
- The chemical analysis of the inedible parts (skeleton and wastes) and the entire body of unmarketable crayfish as a guide to produce the crayfish meal for exploiting their yield and managing their wild stock in the river Nile.

**MATERIALS AND METHODS**

Five traps were used for harvesting the specimens of *P. clarkii* twice monthly during 1998. The traps were cylindrical in shape (80 cm length x 40 cm diameter) with two funnel entrances in the opposite ends and made from flexible wire net of mesh size 1.0 cm. The traps were located parallel to the western side of the river Nile steam at Giza and serial to each and about 100 meters apart in a shallow water of about one meter depth. For attraction the crayfish, the traps were baited with catfishes, set in the afternoon and retrieved later after 24 hours. Each crayfish of the five traps was recorded for sex, body weight (BW) to the nearest 0.1 g, body length (BL) from the tip of rostrum to the end of telson (1mm), carapace length (CL) from the tip of rostrum to posterior median margin of Cephalothorax (1mm) and abdominal length (AL) to the end of telson (1mm). Then, the crayfishes were boiled in water for 5 minutes after measuring and allowed to cool. The abdominal muscles (edible parts) were removed from a represented sample of the boiled crayfishes and the dress-out percentages were obtained from the following equation:

\[
\text{Dress-out} \ (\%) = \frac{\text{abdominal muscle weight (g)}}{\text{Body weight (g)}} \times 100
\]

Both edible parts and inedible parts (skeleton and wastes) and also the entire body of another sample were ground with a mortar and pestle prior to determination of the dry matter, crude protein, crude lipid and ash according to the methods of AOAC (1990). All analyses were performed in duplicate for each pooled sample. Data were compared using the General Linear Model procedure of the statistical analysis system (SAS, 1990) for one-way analysis of variance.
RESULTS

Catchability:

Table (1) shows the relative abundance of the harvested crayfishes *Procambarus clarkii* during the different months of the year. It is obvious that the catch and catch per unit effort (CPUE) were increased during the warm period of the year from March to October with two peaks in April and September. Males dominated the catch all over the year, while the catchability of both males and females followed the same trend of gradual increase and decrease throughout the year. The CPUE of *P. clarkii* (combined sexes) ranged from 141 to 810 with an average of 483 ± 217.2 grams /trap / day, and fluctuated in number between 3.1 and 16.6 with an average of 10.2 ± 4.42 crayfishes / trap / day during the year. On the other hand, the relative abundance of small and large crayfish in the catch was low, while the medium size which ranged between 10 and 14 cm dominated the catch (Figure 1).

![Figure 1. Length frequency distribution of males and females of the crayfish *P. clarkii* harvested from the river Nile.](image-url)
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Morphometric relationships:
The relationships of body length and body weight with the practical morphometric parameters including; abdominal length, carapace length, abdominal weight and skeleton and wastes weight were computed for 840 males and 382 females of the crayfish *P. clarkii*. Four different mathematical plots were used for each relation, namely; absolute-absolute, absolute-logarithmic, logarithmic-absolute, and logarithmic-logarithmic. The coefficient of correlation “r”, the regression constant “a” and “b” value for the different plots were compared. It was found that the logarithmic relation gave the highest $r^2$ value. Therefore, it was selected for a good representation of the following relationships:

1) **Relationship between body length and body weight:**
   \[
   \text{Log. BW} = -0.63 + 2.14 \text{ Log. BL}, \quad \text{or BW} = 0.23 \times BL^{2.14}
   \]
   \[
   r = 0.9978 \quad \text{for males}
   \]
   \[
   \text{Log. BW} = -0.65 + 2.12 \text{ Log BL}, \quad \text{or BW} = 0.22 \times BL^{2.12}
   \]
   \[
   r = 0.9966 \quad \text{for females}
   \]
   Where BW is the body weight (g), BL is the body length (cm), and r is the correlation coefficient. The graphical representation of this relationship is given in Figure 2.

2) **Relationship between body length and abdominal muscle weight:**
   \[
   \text{Log. AMW} = -1.71 + 2.40 \text{ Log. BL}, \quad \text{or AMW} = 19.49 \times 10^{-3} \times BL^{2.40}
   \]
   \[
   r = 0.9983 \quad \text{for males}
   \]
   \[
   \text{Log. AMW} = -1.68 + 2.43 \text{ Log BL}, \quad \text{or AMW} = 21.07 \times 10^{-3} \times BL^{2.43}
   \]
   \[
   r = 0.9977 \quad \text{for females}
   \]
   Where AMW is the abdominal muscle weight (g), BL is the body length (cm), and r is the correlation coefficient. The graphical representation of this relationship is shown in Figure 2.

3) **Relationship between body length and skeleton and wastes weight:**
   \[
   \text{Log. SWW} = -0.65 + 2.08 \text{ Log. BL}, \quad \text{or SWW} = 22.20 \times 10^{-3} \times BL^{2.08}
   \]
   \[
   r = 0.9976 \quad \text{for males}
   \]
   \[
   \text{Log. SWW} = -0.67 + 2.04 \text{ Log BL}, \quad \text{or BW} = 21.58 \times 10^{-2} \times BL^{2.04}
   \]
   \[
   r = 0.9977 \quad \text{for females}
   \]
   Where SWW is the skeleton & wastes weight (g), BL is the body length (cm), and r is the correlation coefficient. This relationship is graphically represented in Figure 2.
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4) Relationship between body length and abdominal length:
\[ \log_{10}(AL) = -0.53 + 1.21 \log_{10}(BL), \text{ or } AL = 0.30 \times BL^{1.21} \]
\[ r = 0.9984 \] for males
\[ \log_{10}(AL) = -0.41 + 1.13 \log_{10}(BL), \text{ or } AL = 0.39 \times BL^{1.13} \]
\[ r = 0.9966 \] for females
Where \( AL \) is the abdominal length (cm), \( BL \) is the body length (cm), and \( r \) is the correlation coefficient. The graphical representation of this relationship is given in Figure 3.

5) Relationship between body length and carapace length:
\[ \log_{10}(CL) = -0.03 + 0.77 \log_{10}(BL), \text{ or } CL = 0.93 \times BL^{0.77} \]
\[ r = 0.9945 \] for males
\[ \log_{10}(CL) = -0.10 + 0.78 \log_{10}(BL), \text{ or } CL = 0.79 \times BL^{0.78} \]
\[ r = 0.9968 \] for females
Where \( CL \) is the carapace length (cm), \( BL \) is the body length (cm), and \( r \) is the correlation coefficient. This relationship is shown in Figure 3.
6) Relationship between body weight and abdominal muscle weight:

\[ \log \text{AMW} = -1.00 + 1.12 \log \text{BW}, \text{ or AMW} = 0.10 \times \text{BW}^{1.12} \]
\[ r = 0.9998 \quad \text{for males} \]
\[ \log \text{AMW} = -0.94 + 1.13 \log \text{BW}, \text{ or AMW} = 0.12 \times \text{BW}^{1.13} \]
\[ r = 0.9995 \quad \text{for females} \]

Where AMW is the abdominal muscle weight (g), BW is the body weight (g), and \( r \) is the correlation coefficient. The graphical representation of this relationship is given in Figure 4.

7) Relationship between body weight and skeleton & wastes weight:

\[ \log \text{SWW} = -0.04 + 0.98 \log \text{BW}, \text{ or SWW} = 0.92 \times \text{BW}^{0.98} \]
\[ r = 0.9989 \quad \text{for males} \]
\[ \log \text{SWW} = -0.04 + 0.97 \log \text{BW}, \text{ or SWW} = 0.91 \times \text{BW}^{0.97} \]
\[ r = 0.9978 \quad \text{for females} \]

Where SWW is the skeleton & wastes weight (g), BW is the body weight (g), and \( r \) is the correlation coefficient. This relationship is graphically represented in Figure 4.

![Graph showing the relationships between body weight and abdominal muscle weight (AMW) and skeleton & wastes weight (SWW) for males and females of the crayfish *P. clarkii* harvested from the river Nile.](image-url)
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**Dress–out percentage:**

The dress-out percentages, which meaning the percentage of edible part (abdominal muscle %) for males and females of *P. clarkii* are represented in Figure 5. The data refer to the priority of females than males in the dress-out percentage of all sizes. A gradual increase in the percentage of dress-out was observed with the increase of the animal weight for both sexes. On the other hand, the overall average of dress-out percentage was $15.5 \pm 1.06$ and $19.0 \pm 1.04$ for males and females respectively.

![Figure 5. The dress-out percentage (edible part %) for males and females of the crayfish *P. clarkii* harvested from the river Nile.](image)

**Chemical composition of crayfish:**

The edible part (abdominal muscle %) of the *P. clarkii* as a human food, represented a minor percentage of about 18% for the combined sexes (Figure 5), while the inedible part (skeleton and wastes) represented a major percentage of about 82% of the entire body. Table 2 shows the chemical composition of the entire body and both of edible and inedible parts as fresh and dry weights. The results indicated that the moisture content in the abdominal muscle was relatively higher than in the entire body and the skeleton and wastes. The muscle contained the highest percentage of protein (71.5%) and the lowest percentage of ash (20.6%) on the dry matter basis. In contrast, the skeleton and wastes contained the lowest percentage of protein (53.8%) and the highest percentage of ash (34%). On the other hand, the whole body contained a moderate content of protein (62.2%) and ash
(27.0%). The content of both of lipid and total carbohydrates was low in muscle and it relatively increased in the entire body and finally in the skeleton and wastes (Table 2).

Table 2. The chemical composition of entire body (BE), abdominal muscle (AM) and skeleton and wastes (SW) of the crayfish *P. clarkii* (combined sexes) harvested from the river Nile. (X±SD).

<table>
<thead>
<tr>
<th>Composition</th>
<th>Fresh weight (%)</th>
<th>Dry weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BE</td>
<td>AM</td>
</tr>
<tr>
<td>Moisture</td>
<td>76.0</td>
<td>78.8</td>
</tr>
<tr>
<td>± 1.92</td>
<td>± 2.10</td>
<td>± 1.87</td>
</tr>
<tr>
<td>Dry matter</td>
<td>24.0</td>
<td>21.2</td>
</tr>
<tr>
<td>Crude protein</td>
<td>14.93</td>
<td>15.16</td>
</tr>
<tr>
<td>± 0.34</td>
<td>± 0.46</td>
<td>± 0.30</td>
</tr>
<tr>
<td>Lipid</td>
<td>1.46</td>
<td>1.04</td>
</tr>
<tr>
<td>ASH</td>
<td>6.48</td>
<td>4.37</td>
</tr>
<tr>
<td><em>Fiber &amp; carbohydrates</em></td>
<td>1.13</td>
<td>± 0.64</td>
</tr>
<tr>
<td></td>
<td>± 0.07</td>
<td>± 0.04</td>
</tr>
</tbody>
</table>

* The values were calculated by the difference.

**DISCUSSION AND CONCLUSION**

The exotic crayfish *P. clarkii* has become a substantial member of the aquatic invertebrate fauna in the river Nile especially in the Cairo sector of Egypt. The suitability of the river Nile ecology with regard to feeding condition and relatively high water temperature throughout most of the year (14-31 °C, Tharwat, 1995) has surely favored the quick and easy invasion of *P. clarkii*, which has been reported to prefer warm water (Riegel, 1959 and Espina et al., 1993). The choice of traps sites was based on our field observations that the muddy shallow waters with some vegetation are preferred by *P. clarkii*, which is in agreement with Huner and Barr (1991) in Louisiana. However, in Mexico, Compos and Rodriguez Almaraz (1992) reported the presence of *P. clarkii* in muddy water of 0.2 - 2.5 m depth and sometimes with no aquatic vegetation. It is worth mentioning that the aggressive behavior of *P. clarkii* against the fish population around, particularly the popular Nile fish *Oreochromis niloticus* (Bolti), resulted in considerable loss of this species, both adult and young, which are either killed, severely attacked or injured (Soliman et al., 1998a). On the other hand, Huner and Barr (1991) pointed out that crawfish biomass was high in comparison with other consumers that cannot readily use living or dead vegetation as food, and actually *P. clarkii* can save energy in the ecosystems by converting detritus into living tissue that would otherwise be lost to higher trophic animals. The decline of the harvested females, it may be attributed to their reproductive behavior for egg laying in their burrows. This observation was recorded by Huner and Barr (1991), who noted that the female begins digging a burrow after mating. Once the females retired in their burrows, they do not leave their burrows in as
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great numbers as do the males. The relative abundance of different sizes of
*P. clarkii* harvested all the year round in the present work also indicates the
highly recruited and future expansion in the river Nile. Although the yield of *P.
clarkii* stands as an important human food in many countries of the world,
being a rich source of protein (Huner and Barr, 1991), their stock in Egypt is
so far under exploitation. Lately, it has been introduced to the fishmarkets
around Giza and has proved to be a popular human food. Up till now, the
observations indicate that the crayfish is undesirable for Egyptian consumers
as a food, this fact leads to increase the crayfish population year after year in
the river Nile and most of inland water resources without any management or
control. So, the work must be done in two directions; the first is the
management of the natural population of this animal by encouraging the
fishermen to catch it, the second is to exploit the harvested yield of the
crayfishes by using it in the animal diets. The chemical analysis of the
crayfish meal and meal of its wastes in comparison with the chemical
composition of the commercial types of fishmeal, shrimp meal, meat meal
and meat and bone meal are shown in Table (3). The data reveal that the
protein contents of both crayfish meal and crayfish waste meal were higher
than of meat meal and meat and bone meal. Ash contents in the two types of
crayfish meals were higher than in the meat meal only, but both of waste
crayfish meal and meat and bone meal were approximately equal in their ash
contents (31.28 and 31.50, % respectively). On the other hand, The protein
content of the different types of shrimp meals varied between 43.0 and 58.5
% with an average of 50.62 %, this average is lower than the protein content
of crayfish meal and slightly higher than in waste crayfish meal. Moreover,
the ash content was relatively higher in both crayfish meal (24.8 %) and
waste crayfish meal than of the mean value of 21.18 % in shrimp meal. This
result can be attributed to the presence of a pair of strong claws of the
crayfishes. However, Herring and Menhaden fish meals were superior to all
types of other meals with respect to their high contents of protein ranging
from 67.4 to 74.4 %. While, the crayfish meals contained the highest values
of ash content compared with the other types of meals. Based on the present
study, *P. clarkii* abdominal muscle seems to be a promising inexpensive
source of animal protein for human consumption.

On the other hand, the unmarketable crayfishes and the inedible parts such
as skeleton and wastes can also be exploited for producing a valuable type of
fishmeal. Their utilization would contribute in the control and management of
the wild population of *P. clarkii* in the river Nile, throughout catching it by
traps.

Table 3. Comparison of chemical analysis between crayfish meal and
crayfish waste meal *P. clarkii* and the commercial fish and
shrimp meals.
<table>
<thead>
<tr>
<th>Source</th>
<th>Moisture (%)</th>
<th>Protein (%)</th>
<th>Lipids (%)</th>
<th>ASH (%)</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crayfish meal</td>
<td>8.0</td>
<td>57.2</td>
<td>5.6</td>
<td>24.8</td>
<td>Present study</td>
</tr>
<tr>
<td>Crayfish waste meal</td>
<td>8.0</td>
<td>49.5</td>
<td>6.6</td>
<td>31.28</td>
<td>Present study</td>
</tr>
<tr>
<td>Shrimp meal</td>
<td>7.6</td>
<td>43.0</td>
<td>6.1</td>
<td>27.7</td>
<td>Mohamed (1995)</td>
</tr>
<tr>
<td>Shrimp</td>
<td>__</td>
<td>53.0</td>
<td>10.8</td>
<td>28.5</td>
<td>liian et al.(1985)</td>
</tr>
<tr>
<td>Shrimp meal</td>
<td>__</td>
<td>58.5</td>
<td>9.0</td>
<td>11.0</td>
<td>Tolokoniov et al.(1984)</td>
</tr>
<tr>
<td>Brine shrimp</td>
<td>11.6</td>
<td>50.8</td>
<td>5.1</td>
<td>19.0</td>
<td>Corazza and Saylor (1983)</td>
</tr>
<tr>
<td>Shrimp meal</td>
<td>__</td>
<td>51.0</td>
<td>5.3</td>
<td>14.3</td>
<td>Lawson and Sugden (1974)</td>
</tr>
<tr>
<td>Shrimp meal</td>
<td>10.0</td>
<td>47.4</td>
<td>3.1</td>
<td>26.6</td>
<td>Titus (1971)</td>
</tr>
<tr>
<td>Herring fish meal</td>
<td>7.2</td>
<td>72.4</td>
<td>8.0</td>
<td>11.7</td>
<td>Samy et al.(1986)</td>
</tr>
<tr>
<td>Herring fish meal</td>
<td>__</td>
<td>73.9</td>
<td>5.5</td>
<td>12.7</td>
<td>Bjornsted et al.(1974)</td>
</tr>
<tr>
<td>Menhaden fish meal</td>
<td>__</td>
<td>70.9</td>
<td>11.5</td>
<td>18.9</td>
<td>Sibbald and Wolynetz (1984)</td>
</tr>
<tr>
<td>Local fish meal</td>
<td>4.6</td>
<td>58.3</td>
<td>20.5</td>
<td>10.6</td>
<td>Samy et al.(1986)</td>
</tr>
<tr>
<td>Local meat meal</td>
<td>5.7</td>
<td>49.4</td>
<td>21.8</td>
<td>13.6</td>
<td>Samy et al.(1986)</td>
</tr>
<tr>
<td>Meat &amp; bone meal</td>
<td>9.3</td>
<td>46.1</td>
<td>9.4</td>
<td>31.5</td>
<td>Waring (1969)</td>
</tr>
</tbody>
</table>

REFERENCES


Kفاءة الصيد، العلاقات المورفولوجية، والتركيب الكيميائي لإستاكاروزا المياه العذبة الدخيلة على نهر النيل وإمكانية الاستفادة منها في مصر

عادل أحمد ثروت

قسم الأنتاج الحيواني، كلية الزراعة، جامعة القاهرة، الجيزة، مصر

تعتبر إستاكاروزا المياه العذبة Procambarus clarkii بنجاح وانتشارا إلى حد كبير في نهر النيل وفرعاه وترعاته والمصارف خاصة في الوجه الحدري، في مصر وأصبح من ضروريا دراسة إمكانية استغلالها ومعرفتها الاقتصادية من قبل نزاع مع الوقت، ومع ذلك فإنها لم تقام أو تستغل في مصر حتى الآن بل تقع في شباك الصيادين عشوائيا ولكنها غير مستهدفة لعملية الصيد. إذا فكلما نقلت البحث الحالي قليلة تكبد إستاكاروزا المياه العذبة بواسطة الجوبي的信心 المحصول والقياس كمية الصيد من هذا الحيوان بالنسبة للأحياء صيدا، يifié الصيد بالحصوية (CPUE) والوزن السنوي المتساوي لهذه الحيوان في نهر النيل. ولدراسات العلاقات المورفولوجية بين كل من أطوال وأوزان الجسم لكل من ذكور وإناث الإستاكاروزا وبين كل من طول البطين وطول عضلة المريء وزن العضلة البطنية (الجزء الماكول) وزن الهيكلي والأحشاء (الجزء غير الماكول) وتم تمثيل هذه العلاقات في صور معادلات ورسوم بيانية، وقد جد أن متوسط نسبة التشافي أعلى في الأناث، حيث يبلغ 10.0 % بينما في الذكور تصل إلى 15.5 %. وقد تم دراسة التركيب الكيميائي لكل من الجسم كاملا والأجزاء الأخرى صالحة للأكل (البديع والأحشاء) والوزن النسبي ومقارنة تركيب الكيميائي لأشهر أنواع من ساحل السمك التجارية لتقديم إمكانية الاستفادة منها في إنتاج مسوحات الإستاكاروزا كبدية لمصون للسمك المستورد. وهذه الدراسة تهدف إلى تحديد إستاكاروزا المياه العذبة في نهر النيل عن طريق الماء الهيدروكيك، بصيدها بالحصوية على ضفاف النيل. إمكانية استغلال المصيد الإستاكاروزا في تجاوز الأول هو الاستفادة من عضلة البطين الصيد للأكل، وتشغيله فكلما ازداد بعداه المخالب والصيادين. وإستغلال الأجزاء الأخرى صالحة للأكل مثل الهيكل والأحشاء وكذلك الإستاكاروزا الكاملة الغير صالحة للتسويق في إنتاج مسوحات الإستاكاروزا كبدية لمصون السمك.
Table 1. Monthly catch and catch per unit effort for males and females of the crayfish *Procambarus clarkii* harvested from the river Nile.

<table>
<thead>
<tr>
<th>Month</th>
<th>Catch weight (Kg)</th>
<th>Crayfish number (N)</th>
<th>Catch per unit effort (CPUE)</th>
<th>Mean</th>
<th>± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
<td>Females</td>
<td>Gram / trap / day</td>
</tr>
<tr>
<td>Jan.</td>
<td>1.014</td>
<td>0.404</td>
<td>21</td>
<td>10</td>
<td>101</td>
</tr>
<tr>
<td>Feb.</td>
<td>1.590</td>
<td>0.710</td>
<td>32</td>
<td>16</td>
<td>159</td>
</tr>
<tr>
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<td>1.487</td>
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<td>33</td>
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<td>5.182</td>
<td>2.921</td>
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<td>518</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>0.816</td>
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<tr>
<td>Dec.</td>
<td>1.504</td>
<td>0.305</td>
<td>32</td>
<td>7</td>
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<tr>
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<td>17.311</td>
<td>840</td>
<td>382</td>
<td>4071</td>
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<td>1.44</td>
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<tr>
<td>± SD</td>
<td>± 1.42</td>
<td>± 0.85</td>
<td>± 28.68</td>
<td>± 17.28</td>
<td>± 141.9</td>
</tr>
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</table>

SD is the standard deviation of the mean values.