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Adaptations

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### **Nudibranch Preference between a Mate and Food**

**Introduction:** I have seen numerous nudibranchs, of various species, throughout many different habitats. Habitats such as mudflats, tide pools, wharf pilings, eelgrass beds and docks are all great places to find sea slug animals (Sept, J. Duane). During my observations in the field I have noticed that many nudibranchs always seem to be paired up in twos. Even when feeding they seem to make it a social occasion. Considering these actions of pairing up I began to wonder if given an ultimatum, would sea slugs choose a mate over food or vice-versa. Then I started to wonder if there would be differences in preferences between adults and juveniles. My prediction was that adult nudibranchs would choose food over mating because they have probably already reproduced a couple of times before and food would be their main priority. As for the juveniles I presume they would choose companionship. I figured they would select companionship for a couple of reasons. First, because they may not have mated in their young age and reproduction would be a priority. And second, I thought that maybe they haven't perfected their foraging, chemoreceptor or alarm response skills and would find some kind of protection in other nudibranchs.

I chose to work with three different species of sea slugs, *Anisodoris nobilis*, *Diaulula sandiegensis*, and *Hermisenda crassicornis*. I decided on these three species because of their availability and common attributes. *A. nobilis* and *D. sandiegensis*, both

dorid nudibranchs, can be found from Alaska to Baja California (Sept, J. Duane) and feed entirely on *Halichondria* and *Haliclona* sponge (Niesen, M. Thomas). *H. crassicornis*, an aeolid animal, was used to see if there was a difference in preference between dorid and aeolid species. However *H. crassicornis* can also be found from Alaska to California (Sept, J. Duane) but they eat mostly on hydroids, ascidians, and other mollusks (Kozloff, N. Eugene).

**Methods:** To test my hypothesis I used a simple y-maze experiment. I collected four nudibranchs of each species, as subjects, and a couple other specimens as possible mates. *D. sandiegensis* and *A. nobilis* were collected at the rocky intertidal area, and *H. crassicornis* off the docks. I had also collected food at the same areas; *Halichondria* for the dorid animals and hydroid for the aeolid. I hooked the y-maze up to running water putting food in one side of the maze and two to three possible mates in the other. I did this with each nudibranch of each species three times apiece.

**Results/Discussion:** I gave each specimen fifteen minutes each to make it down the maze. As you can see in **Table 1** there are many instances where there was inconclusive results. An inconclusive result means that they either went to a side and placed themselves against the wall or they simply did not move far at all. I did not place in my results as to which side they may have set their bodies up against. I did this because I do not believe it would show any bearing on my intended goal. However as **Table 1** also shows, for the most part, that all the specimens, regardless of species, did prefer food over a mate. So one thing I could hypothesize about these results is that

Table 1

*Anisodoris nobilis*

Runs	Adult	Juvenile
1)	Inconclusive	inconclusive
2)	food	inconclusive
3)	food	food
4)	food	inconclusive
1)	inconclusive	inconclusive
2)	inconclusive	food
3)	food	food
4)	food	inconclusive
1)	mate	food
2)	food	food
3)	food	food
4)	inconclusive	inconclusive

*Diaulula sandiegensis*

Runs	Adult	Juvenile
1)	mate	inconclusive
2)	food	food
3)	food	inconclusive
4)	inconclusive	food
1)	inconclusive	food
2)	food	mate
3)	mate	food
4)	food	food
1)	food	food
2)	food	inconclusive
3)	inconclusive	inconclusive
4)	food	food

*H. crassicornis*

Runs	Adult	Juvenile
1)	food	inconclusive
2)	food	food
3)	inconclusive	inconclusive
4)	inconclusive	mate
1)	inconclusive	food
2)	food	food
3)	mate	inconclusive
4)	food	food
1)	food	mate
2)	inconclusive	food
3)	food	inconclusive
4)	food	food

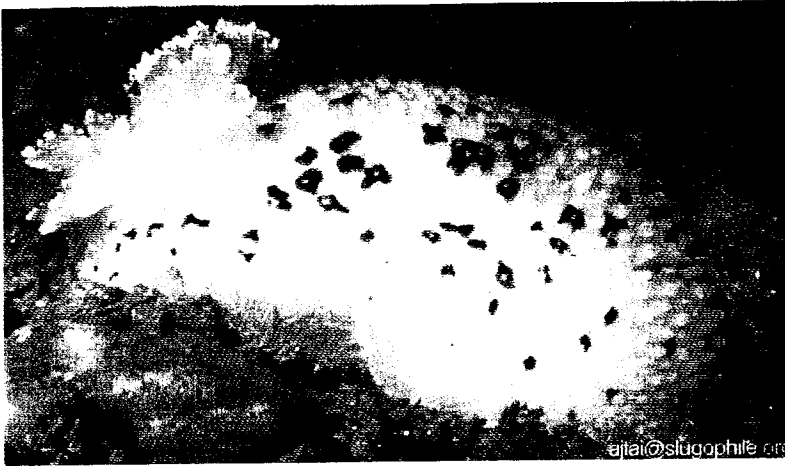
maybe these nudibranchs only actively search for food. Maybe their opportunistic mates that only mate when it is convenient and the situation presents itself. But this claim can easily be debated due to the fact that on five occasions my test subjects had gone to the mate side.

## **References:**

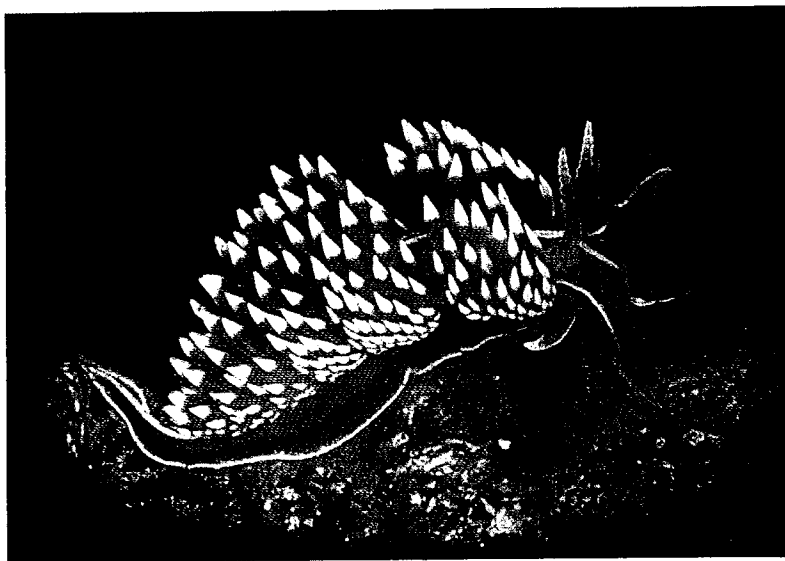
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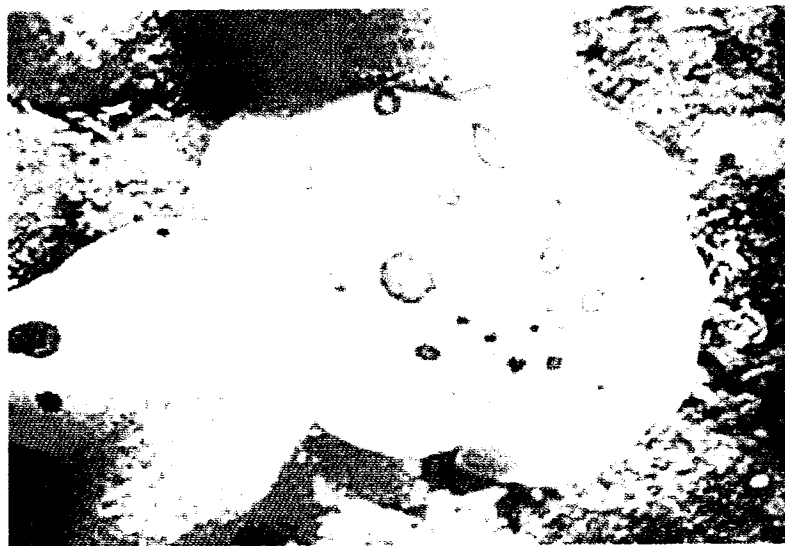
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*Anisodoris nobilis*



*Hermisenda crassicornis*



*Diaulula sandiegensis*