

### THE LEAF SHEEP

by Lanny and Marilyn Johnson

“Mary, I’ve got a picture I would like you to see,” called out Mr. Jones.

“Wow! It’s kind of cute, but what is it?”

Mary asked.

“See if you can guess.”

Mary scratched her head and tentatively suggested, “Hmmm, it looks a like an adorable little lamb that’s having a bad hair day.”

Mr. Jones chuckled and said, “Well, it’s not a sheep, Mary. However, it is known as a ‘leaf sheep.’ It’s also been called a ‘leaf slug,’ or ‘salty ocean caterpillar.’ It even reminds some people of the cartoon character ‘Shaun the sheep.’ Its official name is *Costasiella kuroshimae*, which is hard to pronounce, so we’ll just call it a leaf sheep.”

“If it’s not a sheep, what is it?”

“It is a type of sea slug, Mary. It looks big in the picture, but is actually very small, only growing to about 1 inch (2.54 cm) long. Those tiny black beads are its eyes, and its mouth is on the bottom of its head. What look like two floppy blue ears are called *rhinophores*. These organs contain fine hairs that detect chemicals in the water, enabling the leaf sheep to find food. What you called ‘bad hair’ are the leaf-like parts called *cerata*.<sup>1,2,3</sup>

“Leaf sheep belong to a group of Sacoglossa sea slugs which are believed to be the only

non-plant sea creatures in the world that are able to photosynthesize light into food. If you remember, Mary, plants use something called *photosynthesis* to make their food.”<sup>4</sup>

“Hmmm, I need a little reminder, Dad.”

“Photosynthesis takes place in the leaves of plants. The leaves are made up of very small cells which contain

tiny parts called *chloroplasts*.

Each chloroplast contains a green chemical called *chlorophyll* which gives leaves their green color. Chlorophyll absorbs

the sun’s energy and uses it to separate water into hydrogen and oxygen. Carbon dioxide is then added to the hydrogen to make *glucose* (a kind of sugar used for food). Some of the glucose is used to supply the plant with energy for growth and some is stored in leaves, roots, or fruits for later use. Some kinds of bacteria and algae, which are not plants, can also make their own food using photosynthesis.<sup>5,6</sup>

“Leaf sheep eat green algae. In a process called *kleptoplasty*, the chloroplasts from the partially digested algae are then sucked out and absorbed into the leaf sheep’s leaf-like *cerata*. These stolen chloroplasts are then used to carry out photosynthesis. Some leaf sheep are said to live for months on photosynthesis alone. Interestingly, while performing photosynthesis they glow and become bioluminescent under water.”<sup>7,8</sup>

“Wow, glowing solar-powered slugs! Where

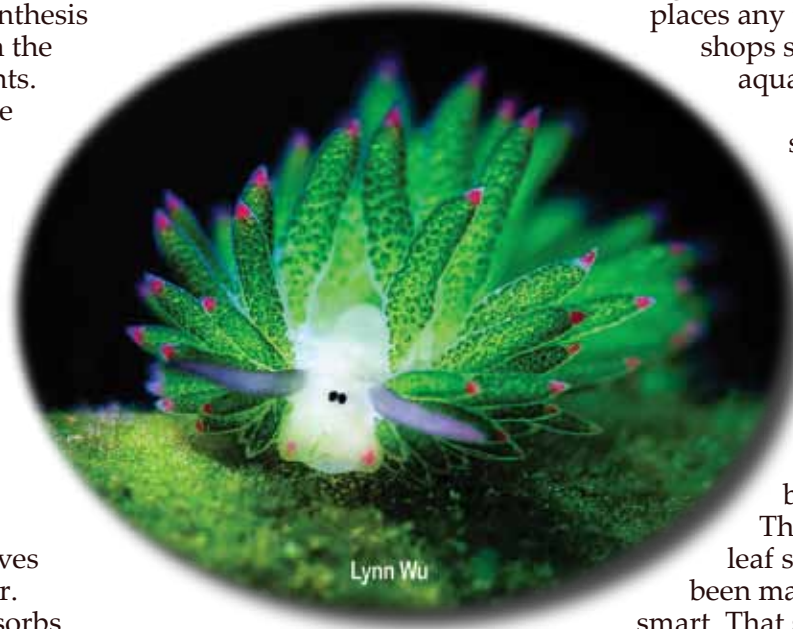
can we go to see them?” Mary asked.

“They were discovered in 1993 in waters near Japan, but have also been sighted in the Philippines, Indonesia, Singapore, Papua New Guinea, Northern Australia and New Caledonia.

Although we can’t go to any of those places any time soon, some pet shops sell them for saltwater aquariums.<sup>9,10</sup>

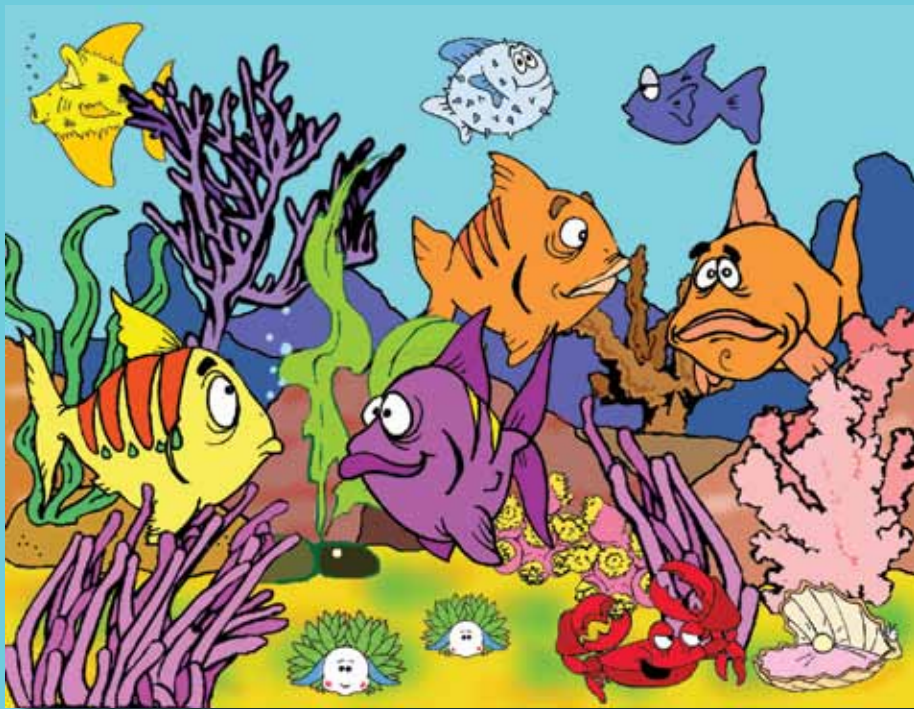
“I think that when we study photosynthesis and all the parts needed for it to work, and then examine the amazing design of the leaf sheep and its ability to use those parts for its own benefit, we have to conclude it could never have happened by chance and accident.

The design in plants and leaf sheep could only have been made by someone very smart. That somebody could only be God!”

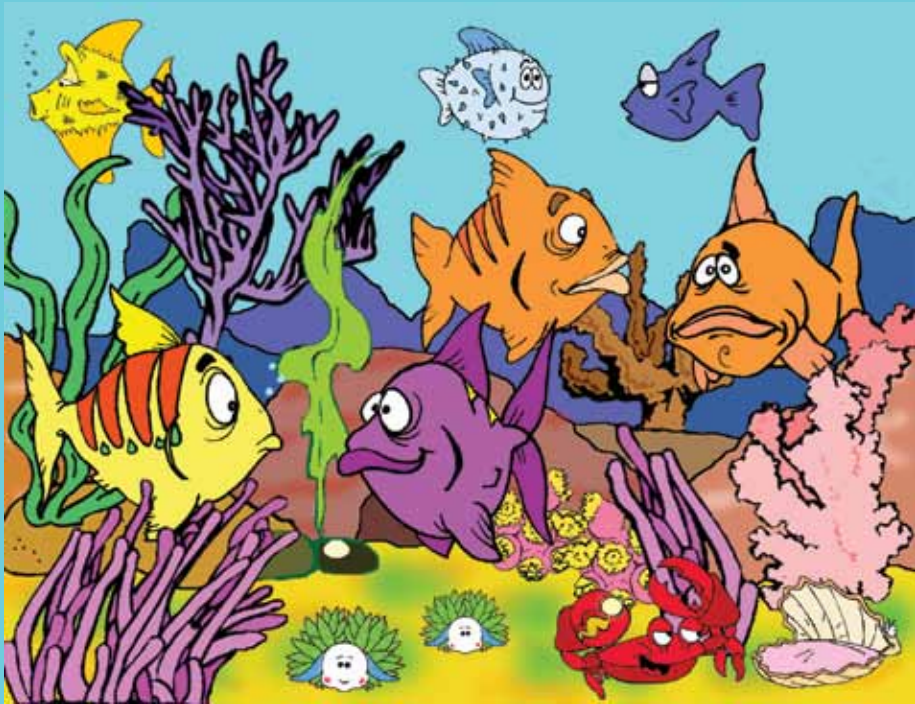


#### References:

- <sup>1</sup> <https://www.amazinglife.bio/post/the-leaf-sheep-costasiella-kuroshimae>
- <sup>2</sup> [https://en.wikipedia.org/wiki/Costasiella\\_kuroshimae](https://en.wikipedia.org/wiki/Costasiella_kuroshimae)
- <sup>3</sup> <https://nerdist.com/article/leaf-sheep-sea-slugs-photosynthesis/>
- <sup>4</sup> <https://mymodernmet.com/costasiella-kuroshimae-leaf-sheep-sea-slug/>
- <sup>5</sup> <https://photosynthesiseducation.com/photosynthesis-for-kids/>
- <sup>6</sup> <https://kids.britannica.com/kids/article/photosynthesis/353624>
- <sup>7</sup> <https://www.thedodo.com/sea-sheep-leaf-slug-1259833755.html>
- <sup>8</sup> [https://en.wikipedia.org/wiki/Costasiella\\_kuroshimae](https://en.wikipedia.org/wiki/Costasiella_kuroshimae)
- <sup>9</sup> [https://en.wikipedia.org/wiki/Costasiella\\_kuroshimae](https://en.wikipedia.org/wiki/Costasiella_kuroshimae)
- <sup>10</sup> <https://www.amazinglife.bio/post/the-leaf-sheep-costasiella-kuroshimae>



The leaf sheep are happily munching away on green algae. Find the 18 differences between the two pictures.



To see who made the leaf sheep, solve the puzzle below

**FALLEN LETTERS**

Reconstruct the Bible verse from the jumble of letters that have fallen under the grid. The letters are stacked up in the correct columns but not in the right order.

G		,	W	H		M	D
	E		W	O	L		D
E	V		Y	T	H		I
	T	,					
A		S		1	7	:	2
				4		a	

		E							
T	H	C	T			O	N	A	N
I	O	D	R			R	I	D	G



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FOR ANSWERS GO TO: <http://www.discovercreation.org/kids/NewsletterAnswers.htm>

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