

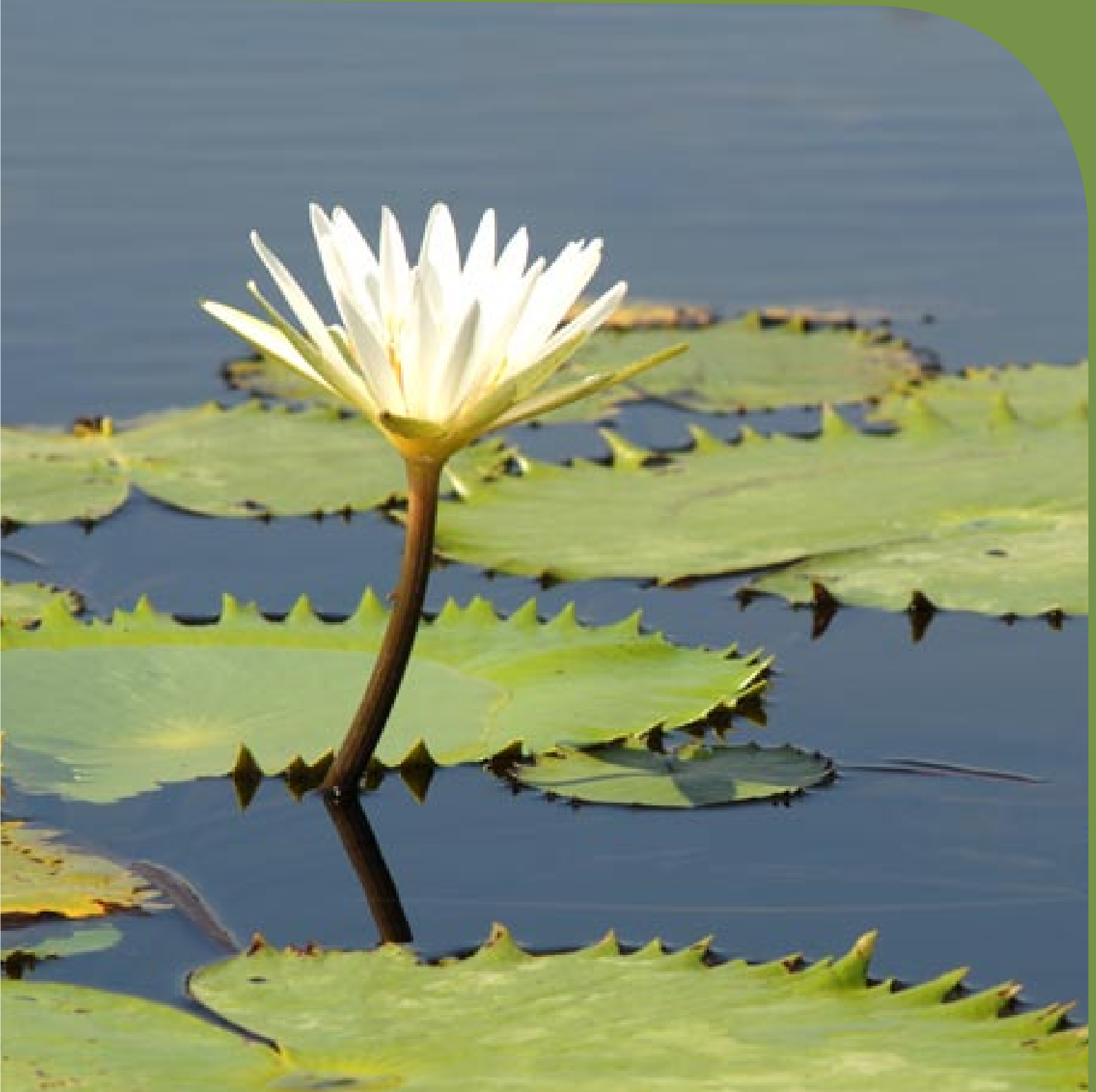
September 2008



ASOCIACION
FLAAR
MESOAMERICA

Sacred Maya Flower

Nymphaea ampla Salisb



Mirtha Cano and Nicholas Hellmuth

Nymphaea ampla Salisb., also known as *Castalia ampla* Salisb and commonly known as "Nape, nympha, nohoch, naab (Maya Petén), Standley (1950), white lotus or waterlily, is one of the most beautiful flowers in Petén and Izabal wetlands, but it is not only its fragrance and beauty that make it so special, the ancient Maya used this plant in many of their rituals, considering it sacred.

It is believed that the flower and fruit of some species of *Nymphaea* has hallucinogenic substances (Embodem 1979) that might be the reason why it is represented in many of their paintings and rituals. However it has been reported that the rhizome is considered edible by some cultures which have been devised ways to eliminate toxins boiling part of the plant that will consume; today is used as an ornamental plant.

Many of their drawings represent an underwater world (Fig.1). Their observations show a lentic aquatic ecosystem that means quiet water as swamps and lakes such as many wetlands of Petén, Izabal, Alta Verapáz and Huehuetenango, where the Maya civilization was established in Guatemala.

This type of ecosystem is the habitat of the white waterlily and many of the specimens of aquatic flora and fauna represented in the Mayan art.

The fruit of the *Nymphaea ampla* is an important part of the food chain for many species of fish and mainly for the turtle *Dermatemys mawii* which is now in danger of extinction (included in Appendix III of the International Commission on trade in species of wild flora and fauna in danger (CITES) due to the reduction of their habitat, illegal trade for human consumption, pollution and so on.



Fig. 1 Underwater world .“Monster und Menschen” Nicholas Hellmuth. 1987.

In figure number 2, again, there are two fishes eating the fruit of a waterlily. You can see a similarity between the real structures of a plant *Nymphaea* even though the Maya have the characteristic of making highly stylized drawings full of mystery and imagination.

At first time, we thought it was a flower with a very long stalk but our observation in the field trips concluded that it is the ripe fruit which remains stuck to the stem, I believe that the drawing has a lateral view and it is showing the sepals and the apices in the form of teeth.

Behind the stem there is a kind of stylized leaf that resembles the leaves of the *N. ampla*. On this occasion is not showing the reticulated vein pattern because the vision might be distorted with the light of the sun and the water undulations viewed from the bottom of the water to the surface, also in the drawing we can see other plants, coexisting with the waterlily in their natural habitat.

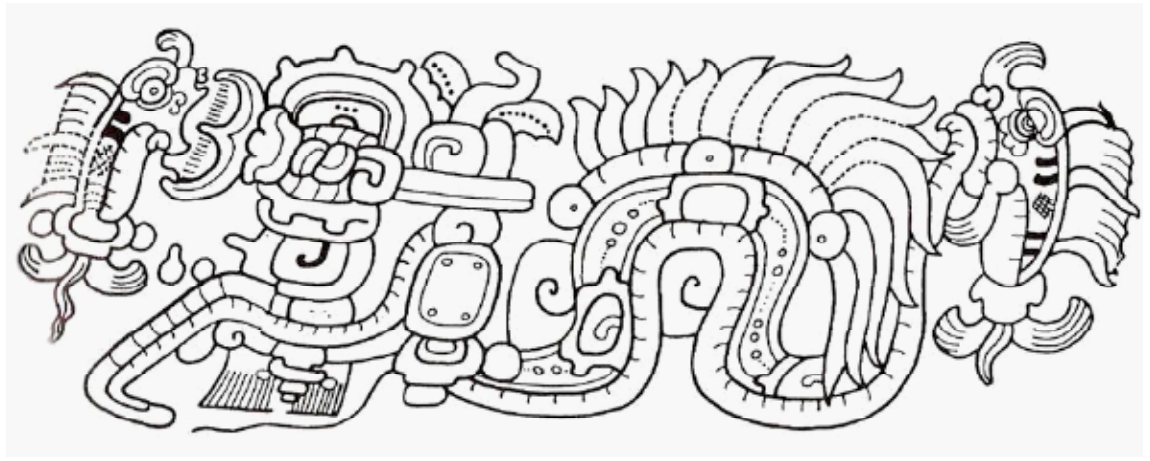


Fig. 2. Underwater world .“Monster und Menschen” Nicholas Hellmuth. 1987.



Fig. 3. Underwater world. Nicholas Hellmuth. “Monster und Menschen” 1987,

It is worth mentioning that *Nymphaea* plants are very susceptible to pollution and sudden flows of water as they prefer quiet waters and wetlands. During our routes field in search of nape, we could not find a single plant on the shores of Lake Petén Itzá, neither Ixlú river; however we enjoyed the trip watching the diversity of flora and fauna of the tropical rain forest.

Don Ernesto, fisherman and forest guide has been living in Petén for 17 years and previously lived in Izabal. He explained that 10 years ago it was very common to find this plant on the lake, mainly in Remate, and Rio Ixlú but that after Hurricane Stan, Rio Ixlú was overwhelmed and populations of *N. ampla* were greatly reduced but there are other aquatic plants that have adapted to an environment of a greater degree of contamination.



Fig. 4. Rio Ixlú, Flores Petén Guatemala, 2008.



Fig. 5. Yellow crowned night-heron (*Nyctanassa violacea*) Matinete cabecipinto.



Fig.6. Great Egret (*Casmerodius albus*) Garceta grande.

To continue our quest for “nape” we had to travel to Rio Tres Arrollos, El Naranjo, Petén, where we found a large population of *Nymphaea ampla*.

N. ampla is characterized by a white flower of 8-16 cm wide, an emerging long tubular stem, reaching approximately 25 to 70 cm tall, the leaves are green and toothed, they can measure from 10 to 45 cm wide or more, green above, the lower side is red purple often with small black spots, have high and reticulate venation, sepals oblong-lanceolate green; petals 12 -- 21 oblong-lanceolate, stamens of 90-190.

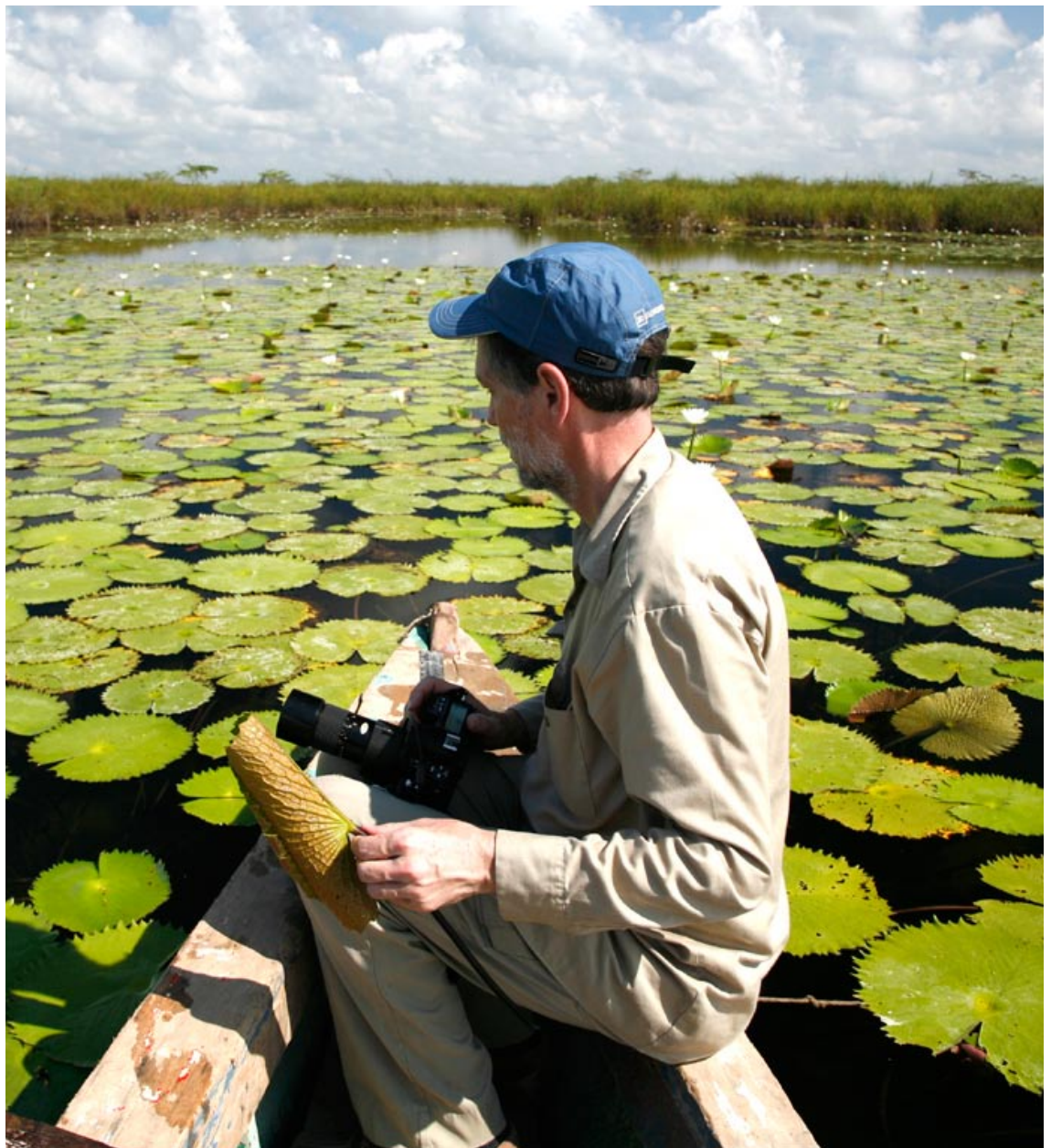


Fig. 7 Dr. Nicholas Hellmuth in Tres Arrollos river, El Naranjo, Petén, Guatemala 2008.



Fig. 8 *N. ampla* top left corner, on the slopes of marshy River Tres Arrollos, El Naranjo Peten. Right: longitudinal cut showing the floral organs. Down: Flower and fruit.

The fruit is a berry that resembles a tomato. It is hard, jagged, dark brown at the apex, and contains many seeds. To study *N. ampla* in the Maya iconography we did several dissections of flower and fruit, trying to find some similarity between the drawings and the plant.



Fig. 9 Fruit of *N. ampla*.



Fig. 10 Fruit of *N. Ampla* cut in half to show the areas with the seeds.



Fig. 11 We used the N. Hellmuth dissertation book, *Monster Menschen und in der Kunst-Maya* in our field trips research of waterlily. "The seeds are bright purple when not yet ripe, when the flower petals are still present."

The *N. ampla* cycle of life, begins after the flower has been pollinated and fertilized, the plant produces a dark brown fruit, hard or soft depending on the state of maturation.

Once the fruit rots, it disintegrates and the seeds are released into the aquatic environment. The seeds begin to germinate in a period of 20 days or less. The first stage of germination is the appearance of primordial leaves, and then it develops the first root that will help the plant to be anchored to a mud substrate as appears in the figure # 11.

In our experience with the garden at FLAAR office in Guatemala City, the seeds germinated in a period of a month, taking on account that there is a difference of 1500 meters of altitude between Guatemala City and Petén. I believe that's why growth has been slow, plus the water conditions such salinity and pH.



Fig. 12. Plant of *N. ampla* recently germinated in FLAAR office garden.



Fig. 13 "Recently germinated *N. ampla* in the ethnobotany garden at the FLAAR Mesoamerica office in Guatemala. To our knowledge, this is the first ethno-botanical project that is a cooperation between archaeologist/iconographer (N. Hellmuth) and a Guatemalan biologist (M. Cano). If we had more space, or research funds, we could expand this type of research and publication."

The flowers of *Nymphaea* emerge during the early morning hours and with its pleasant odor and sweet attract different species of bees (*Apis mellifera*) sting less bees (*Tetragonisca angustula*, *Partamona belliniata*, *Mellipona bekii*, *Trigona fulviventis*) and other insects which are involved in the process of pollination, later the flower begins to wilt, submerges to form the fruit, and thus initialize their cycle of life again, which plays an important role in the ecology of wetlands of Petén.

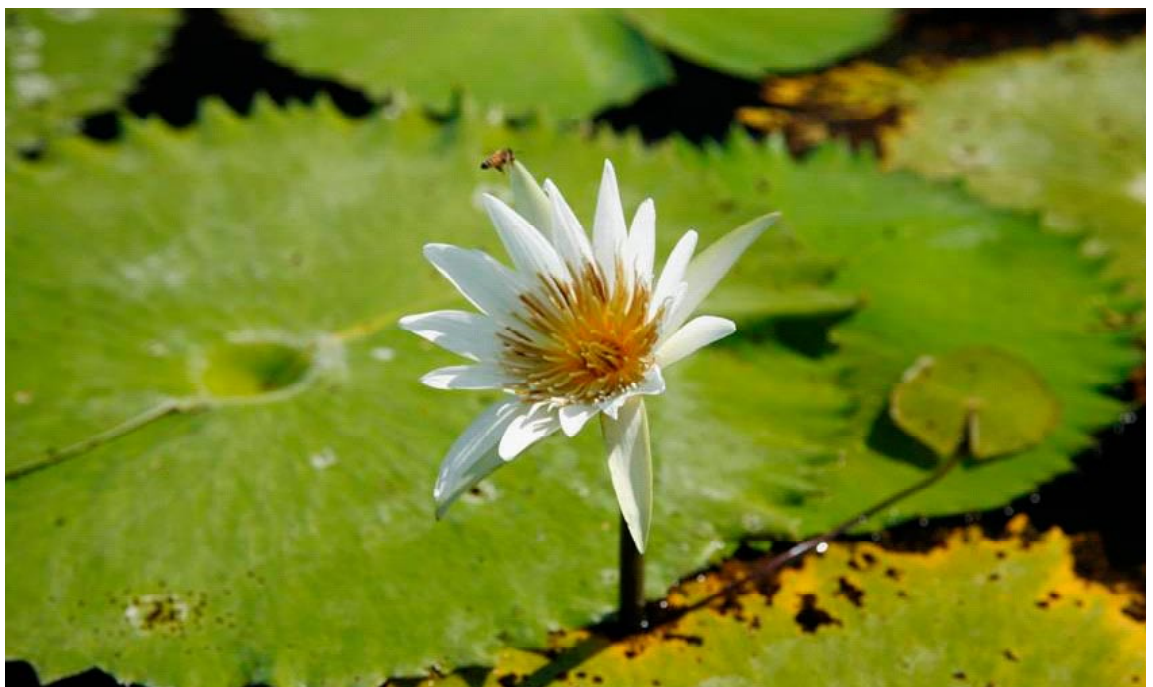


Fig. 14 Up: Flower with a long stem. Down: Bee (*Apis mellifera*) collecting pollen. Photo by Nicholas Hellmuth. FLAAR photo archive.

Waterlily is common to observe in Guatemala wetlands like rivers, lakes and swamps in the tropics. In the Chiquimulilla channel which is in Ixtapa, near to the Monterrico beach, something curious happens with the aquatic vegetation during the rainy season.

Started in June with the initialization of the rain, the seeds of waterlily and other plants that stay in the mud germinated and started to fill the quiet waters of the channel.

This happens once the salt water from the sea recedes because the water flow from the rivers increases in the rainy season and gets stronger than the flow entering the sea, so it recedes,

This occurs during the months of May through November at the end of the rainy season the flow of fresh water from rivers decreases and allows sea water from the canal.

The freshwater plants, including vines, nymphs, and aquatic weeds that remained during the winter season tend to disappear due to their vascular system is not adapted to live under conditions of high salinity of the water and therefore die, so the landscape changed completely and only remaining mangrove forests.



Fig. 15. *Jacana spinosa*. showing its yellow spurs in the wings, as a defense mechanism to shoo predators. This specimen is directly related with waterlily and reeds in the Chiquimulilla channel, because it feeds of insects attracted by the waterlily flowers and built its nest between the reeds. Photo by Jaime Leonardo. FLAAR photo archive.



Fig. 16. *Jacana spinosa* bird iover plants of *Nimphaea* sp. and *Eichhornia crassipes*. Down: Local man transporting wood sticks for construction.





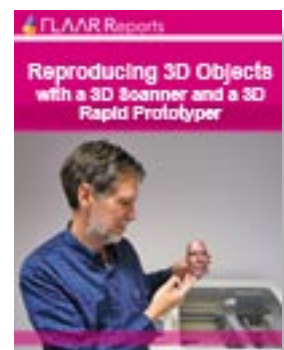
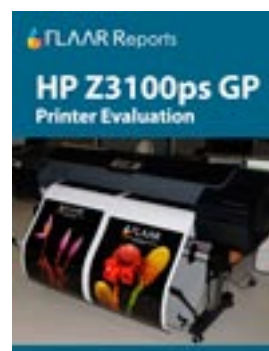
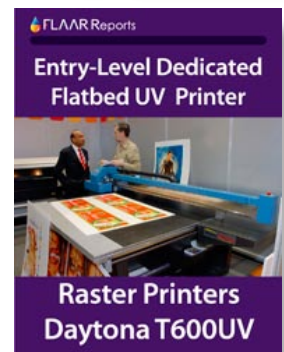
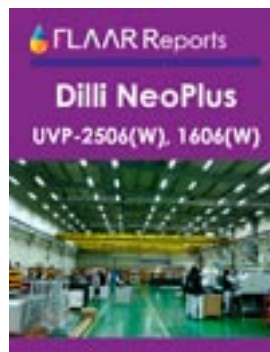
Fig. 17. Waterlily blooming. in the Chiquimulilla Channel, Ixtapa. Photo by Jaime Leonardo. FLAAR photo archive.

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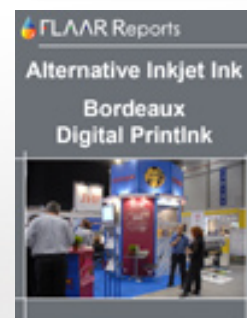
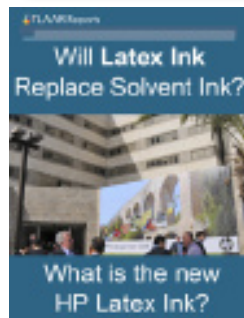
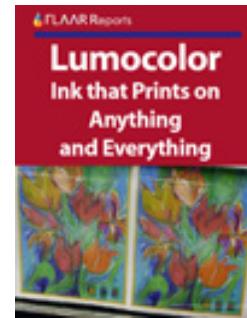
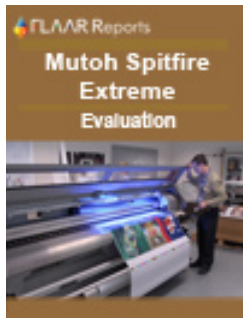
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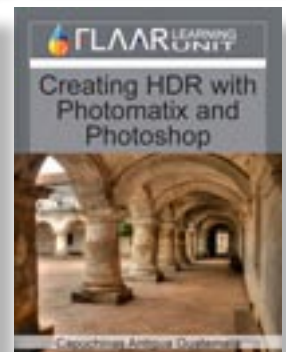
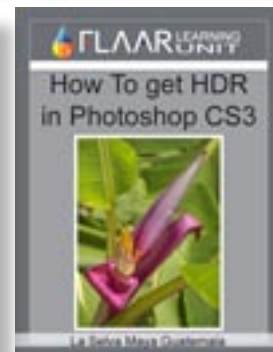
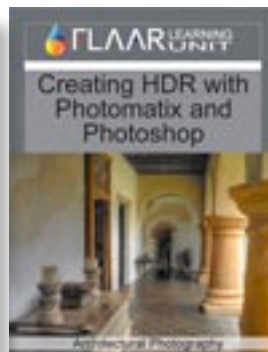
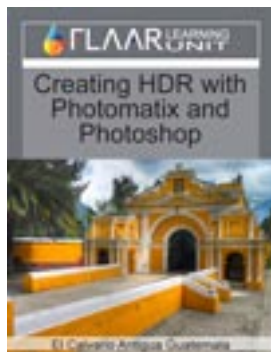
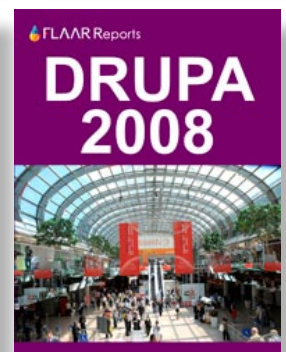
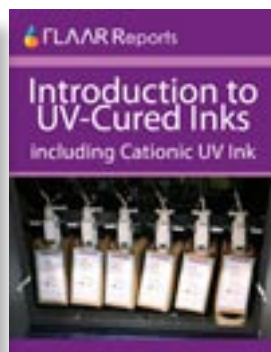
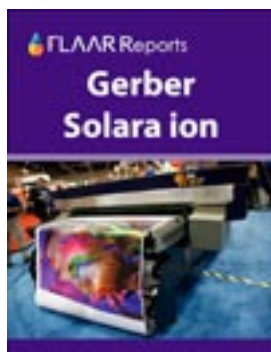
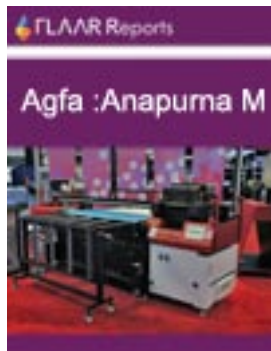
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