DECEMBER 2019

#2

Atelier Luma Algae Review

CALL FOR IDEAS & CONTRIBUTIONS

ATELIER LUMA INTERNATIONAL ALGAE SUMMIT

LUMA DAYS #4 / 27 – 28 MAY 2020

The call for ideas and contributions is now open for the international summit dedicated to algae, the flagship resource of the Anthropocenic era. The event will take place on May 27 and 28, 2020 in Arles as part Luma Days 4#. The summit will offer a comprehensive algae point of view on the XXIst century by exploring the multiple histories, narratives, influences, significations, representations and the potentials for a new design paradigm. Within these 2 days of keynote lectures, break-out sessions, exhibition and workshops, new research perspectives will emerge and new application scenarios triggered. By building a transdisciplinary algae knowledge platform, Atelier Luma wants to encourage a new reading of our environment through the (re)valorization of the living world. This call for ideas and contributions is a first attempt to explore and broaden the possibilities of multidisciplinary research in design around algae. With the algae summit, Atelier Luma seeks to engage with a wide range of experts and practitioners in the development and dissemination of innovative and critical ideas for potential uses of the algae resource.

WHEN

Open from
20th of December, 2019, 12:00pm EST
to 31st of January, 2020, 6:00pm EST

Announcement of the selected contributions
End of February 2020

WHO

Designers, architects, artists, engineers, farmers, economists, lawyers, researchers, scientifics, thinkers, critics, curators, activists, and other practitioners from all over the world.

WHAT

We are inviting multidisciplinary practitioners to submit lectures, videos, performances, essays, interventions, installations, etc. that explore a specific aspect of algae knowledge, research and applications with the intention to:

— Investigate algae in all forms: theoretical, sensorial, spatial, conceptual, historical, etc.
— Establish new collaborations across borders, institutions, and disciplines to expand the Algae Platform scope of actions
— Advance and stimulate knowledge exchange in the field of biodesign
— Foster new and collective research methodologies within the design field

(NON-EXHAUSTIVE) THEMES

- Algae biology
- Algae physiology
- Algae and evolution theories
- Algae as bioindicators
- Algae ecosystems
- Algae botanic collections
- Feminine botany and algae herbaria history
- Biofertilizers
- Alimentary algae
- Algae farming
- Pharmaceutics and healthcare
- Water & air bioremediation
- Material R&D and other applications in design and architecture
- Biotechnologies
- Nanotechnologies
- Property of genetic resources
- Bio-based economy
- Biofuels
- Rights of Algae
- Regulations
- Certifications
- Algae fiction/mythology/imaginary
- Algae symbolism
- Algae and space conquest
- Algae sound
- Biophotography

HOW

The Open Call is open to individuals and collectives. Applications should be written in English or French and submitted in a single PDF file of maximum 10MB to algaeplatform@luma-arles.org. In order to be considered, proposals should include the following information:

— Name of individual or collective
— A self-introduction in which applicants articulate the relation between their interests and practice revolving around algae
— Type of contribution: exhibition of work / performance / lecture / workshop / essays / film screening / other
— An image and a description of the proposal (max 500 words)

ATELIER LUMA ALGAE REVIEW

Everything you always wanted to know about algae

The algae monthly review is a curated newsletter dedicated to algae knowledge and the Atelier Luma Algae Platform activities. By mapping existing algae knowledge — from literature to scientific research and history — the algae review acts as a pedagogical tool gearing up for the algae summit to consolidate a community of international algae practitioners, creatives and experts to actively participate to the event in Luma Arles in spring 2020.

ALGAE, THE WORLD'S MOST IMPORTANT PLANT

— Mitigation and Adaptation Strategies for Global Change / Russell Leonard Chapman

Algae have a crucial role on planet Earth, but still very few people are aware of it. Despite its usual negative connotations (think of the word "seaweed" and of the yearly invasion of algae on the shore or in ponds), algae are the real architects of life of Earth: the first cyanobacteria, commonly called blue-green algae, appeared some 3,5 billion years ago in the ocean and performed photosynthesis. They started releasing oxygen into the atmosphere, allowing the apparition of more complex forms of life. Algae literally changed the course of evolution. They are still crucial on our Blue Planet: even if the total biomass of the world's algae is but a tenth of the biomass of all the other plants, algae provide more than 50% (research even assess more than 70%) than the current oxygen on Earth. Not to forget that most of our (human) food rely, directly or indirectly on the algae. This mini-phycology guide written by a true algae passionate will guide the beginners in the wonderful world of algae.

SOURCE

→ **AN INTRODUCTION BY MITIGATION AND ADAPTATION STRATEGIES FOR GLOBAL CHANGE** • RUSSELL LEONARD CHAPMAN / JANUARY 2013, VOLUME 18, ISSUE 1, PP 5-12

SEAWEED: IRELAND'S NUTRITIONAL GIFT FROM WINTER

— The Irish Times / Manchán Magan Jan 26, 2019

When the sun retreats in the winter and the land plant production is reducing, the sea cold waters offer the best nutritious product you can dream of: seaweeds. Winter seaweed traditions were common in Ireland – and still are – where seaweed species are called by their Irish names. On bleak December mornings, families would rush to the shore, get into the freezing water and collect the precious kelp. The seaweed was so valuable that it provoked arguments between families about seaweed rights, each clan zealously guarding their own supply. Ironically, this tension led to a catalogue of idiomatic seaweed expressions: "bíodh an fheamainn aige" translates as "let him have the seaweed" for "let him go to the devil". This article warns us against the disappearing vocabulary that refers to seaweed harvesting tools, as the seaweed traditions decline. What better way to honor those traditions than by cooking?

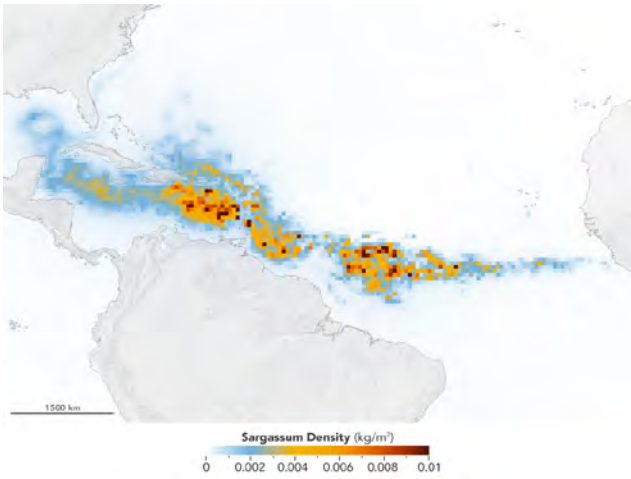
SOURCE

→ **SEAWEED: IRELAND'S NUTRITIONAL GIFT FROM WINTER THE IRISH TIMES** • BY MANCHÁN MAGAN / JANUARY 26, 2019

SATELLITES IN SPACE SPOT LARGEST SEAWEED BLOOM ON EARTH

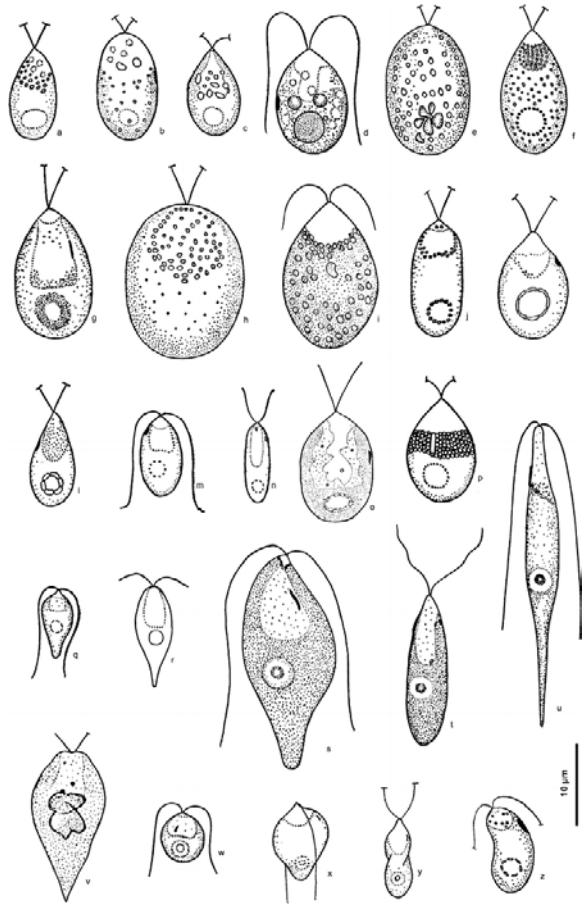
— Space.com / Passant Rabbie
July 10, 2019

Sargassum is recently getting more famous for all the nuisance it creates on the Carribbean shores. Yet this brown macroalgae that grow in temperate and tropical oceans is normally a real benefactor for marine ecosystems. It has developed berry-like structures that are filled with oxygen and bring buoyancy to the algae. Floating mats of Sargassum provide a shelter for a large marine biodiversity: fishes, sea turtles, marine birds and crabs find food and breeding nests in this habitat located at the ecotone between water and air. In the last years however, the algae have proliferated, benefitting from the increased nutrient flows coming from deforestation and fertilizer runoff. They are causing blooms that are so dense that they lead to oxygen depletion and turn to an ecological threat. In July 2019, the biggest seaweed bloom in the world have been recorded, joining the African and American continent to form the Great Atlantic Sargassum Belt, extended on a distance of 8850 km. Those massive blooms are expected to occur regularly as pollution and climate change persists, causing each year a deluge of seaweed on the shores. Local initiatives are making use of the available seaweed, exploring its potential for a broad range of applications in construction, materials, fertilizers, etc.



House built with bricks made of Sargassum (Sargablocks) by Omar Vazquez Sanchez in Mexico, 2019 © BlueGreen

SOURCE
→ **SPACE.COM** · PASSANT RABBIE / JULY 10, 2019



Taxonomy of the genus Dunaliella

Salins de Giraud, Camargue © Jean Roché

THE ALGAE PLATFORM COLUMN

DUNALIELLA SALINA, THE PRECIOUS PINK OF CAMARGUE

by Johanna Weggelaar pp. 4 – 6

In summertime the salt ponds of Salins de Giraud* in the Camargue take a deep pink color. This magical event is caused by a specific type of algae: Dunaliella Salina, a halophilic green alga, thrive in the high salt concentration water (salinity can reach 320g/L) and develop the Beta-Carotene pigment as a protection against the sun and the salt. Named after Felix Dunal, a French botanist from Montpellier (1789 – 1856) who described the red coloration of the salt ponds, Dunaliella is the dominant primary producer** in those hypersaline environments meaning it is an important CO2 sequester and it underlies the whole local ecosystem. The salt fields are home to different invertebrate species,in particular to the brine shrimp Artemia that has adapted to the annual cycles of the salines and feeds on Dunaliella. Artemia in turns feeds the population of migratory birds settling in the Camargue during the summer. Through this specific food chain, the fascinating flamingos owe their beautiful pink feathers to the microscopic Dunaliella!

It is crucial to reassert the cultural as well as ecological importance of Salinas in the Mediterranean. These artificial sites have shaped the landscape of the Mediterranean coastline, and they are hosting a very specific and fragile biodiversity. Interestingly enough, the industry Salinas that are still actively exploited have a great ecological value. Yet, the Salinas are currently threatened. They are abandoned because of their lack of competitivity with the industry of salt extraction in land salt mines and disappearing with the growing urbanization of the coastal areas due to massive tourism.

The high concentration of Beta-Carotene makes Dunaliella interesting for pharmaceutical and cosmetic purposes and as food complement. The algae has generated lot of research in the last decennia's to understand its physiology and learn how to cultivate it at bigger scales in the lab. In the field of design, Atelier Luma has developed specific uses of the Dunaliella, collaborating with research labora-

Filament for textile production coloured with Dunaliella Salina, 2019

Filtration of Dunaliella Salina from the Camargue in the lab

Atelier Luma and Studio Klarenbeek & Dros, 3D printed vessels using a biopolymer mixed with Dunaliella and Halobacterium, 2019

tories and institutes from the region, in particular with Les Salins, the industry in charge of the Camargue's salinas. The high colouring potential of the carotenoids produced by the Dunaliella is interesting for material applications such as bioplastic, textile and paint. The different objects bear the typical landmark of the Camargue. Atelier Luma aims at giving value to this largely unexploited local resource while contributing to the preservation of the Camargue wetlands and producing ecological and healthy materials.

* The man-made salt marshes of Salins de Giraud, created in 1856, cover a surface of about 11.000 ha and form the largest saline in Europe. The salt is harvested from seawater, using the process of evaporation with a carefully controlled water circulation
* a primary producer is an organism that use the energy of the light to produce organic matter.

TO KNOW MORE ON THE SALINAS AND THE DUNALIELLA SALINA

→ HOFFMANN (1958), AN ECOLOGICAL SKETCH OF THE CAMARGUE

→ **DOWNLOAD : JOHN G. WALMSLEY, THE ECOLOGICAL IMPORTANCE OF MEDITERRANEAN SALINAS**

→ **A HUNDRED YEARS OF DUNALIELLA RESEARCH: 1905-2005**

WHERE TO SEE THE ALGAE PLATFORM

→ *Nature* — **Cooper Hewitt Design Triennial with Cube Design Museum**, New York, USA. Until 20 January 2020. And **CUBE Design Museum**, Kerkrade, Netherlands. Until 20 January 2020

→ *Eco-Visionaries* at the **Royal Academy of Arts**, London, UK. From 20 November 2019 until 10 February 2020

→ *Nature morte / Nature vivante* **at the CID, Center for innovation and design at the Grand Hornu**, Hornu, BE. From 24 November 2019 until 20 March 2020

→ **World Economic Forum Davos**, Davos-Klosters, CH. From 20 until 24 January 2020

ARTICLE 1
© Victor Picon for Atelier Luma

ARTICLE 2
Seaweed in Co Galway © The Irish Times

ARTICLE 3
1st Image : Data from NASA's Terra and Aqua satellites revealed the immense size of a record-breaking algal bloom known as the Great Atlantic Sargassum Belt. © NASA/Earth Observatory

2nd Image : House built with bricks made of Sargassum (Sargablocks) by Omar Vazquez Sanchez in Mexico, 2019 © BlueGreen

COLUMN
1st Image : Borowitzka, M.A., Siva, C.J. The taxonomy of the genus Dunaliella (Chlorophyta, Dunaliellales) with emphasis on the marine and halophilic species. J Appl Phycol 19, 567–590 (2007)
2nd Image : Salins de Giraud, Camargue © Jean Roché
Image 3, 4: © Joana Luz for Atelier Luma
Image 5: © Florian Tripoteau for Atelier Luma

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