

Case Study of The Divine Shepherdess Painting. Historical Significance, Conservation Issues and Treatment for Fungal Attack.

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Dossier

Case Study of *The Divine Shepherdess* Painting

Historical Significance, Conservation Issues and Treatment for Fungal Attack

Megan Crouch

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Cette étude se focalise sur l'importance historique de *La Divine Bergère/The Divine Shepherdess*, un exemplaire unique de peinture "sarga" sur un rouleau portable de La Mission de Carmel à Carmel, Californie. La peinture a été utilisée pendant le travail missionnaire de la période coloniale de l'espagnole de la nouvelle Espagne (1492-1821). Une description technique des matériaux de construction de la peinture et les questions de conservation sont présentées. Le plan de traitement

qui a été mis en place contre la croissance de moisissures active de la peinture est décrit, et une autre étude de cas portant sur la réduction des moisissures pour une peinture est incluse.

This study focuses on the historical significance of *The Divine Shepherdess*, a unique type of portable rolled “sarga” painting from the Carmel Mission in Carmel, California. The painting was used in missionary work during the Spanish Colonial period in New Spain (1492-1821). A technical description of the painting’s construction materials and conservation issues are presented. The treatment plan that was implemented for the painting’s active mold growth is described, and an additional case study involving mold abatement for a painting is included.

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Index terms

Keywords :

[sarga](#), [carmel mission](#), [peinture](#), [moisissure](#), [attaque fongique](#)

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[sarga](#), [carmel mission](#), [painting](#), [mold](#), [fungal attack](#)

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[Introduction](#)

1Mission San Carlos Borroméo del Río Carmelo, known as the Carmel Mission, located in present day Carmel, California, houses one of the most extensive collections of Spanish Colonial paintings known in California and all of New Spain. There are approximately 120 paintings (mostly of religious subject matter) and 1,530 objects in total; including sculptures, liturgical silver and vestments.

The painting collection was accumulated during the mission's long and colorful history beginning with its early days as one of California's first outposts established by Spain during the Spanish Colonial period (1492-1821). The mission itself was established in 1771 and is the second of the twenty-one missions in Alta California (Sheridan and McCormick 2011).

2The author began researching the painting collection at the Carmel Mission in August 2012 as part of her Masters thesis in Conservation of Fine Art at Northumbria University. A rare and unique painting was pointed out by one of the Carmel Mission docents: a portable rolled sarga painting of *The Divine Shepherdess*. Because this type of painting is so rare, and because a host of conservation issues arise due to the painting's portable nature, this study will provide a technical description of the painting's construction materials and conservation issues. Emphasis will be placed on fungal attack, the primary conservation threat to the painting at the time it was examined, and the eradication treatment performed. Because of the limitations posed by this initial

treatment, an alternative treatment approach to fungal and microbial remediation for paintings through an additional case study will be discussed.

3Fig. 1 *The Divine Shepherdess*

□
[Zoom Original \(jpeg, 136k\)](#)

A portable rolled sarga painting from the Carmel Mission collection.

© photographer Dennis Wyszynski

[Sargas: Historical Significance](#)

4During the establishment of the California mission system, the missionaries required a visual method of communication in order to convert the native people to Catholicism and the European way of life due to the language barrier and cultural differences. Hence, painted images played a significant role in conversion efforts. They served as didactic tools and symbols of religious justification.

- 1 After having the apparition, Fray Isidore commissioned a painting of the vision describing in deta [\(...\)](#)

5More specifically, a unique type of portable rolled painting often referred to as a “sarga” was employed. This type of painting hung from a wooden baton and many had an accompanying wooden carrying case attached to the bottom of the painting making it the perfect portable tool for missionary efforts. These paintings were taken from mission to mission in California, or to festivals and fiestas in remote areas (Kimbrow et al 2009; Bargellini and Komanecky 2009). The subjects chosen for sargas used in missionary work were the key figures in Christianity. The Virgin Mary as The Divine Shepherdess was a popular subject of mission paintings, and recalls the vision of Isidore of Seville, a Spanish Capuchin friar who in 1703 had an apparition of the Virgin dressed as a shepherdess (Huckins 2011).[1](#)

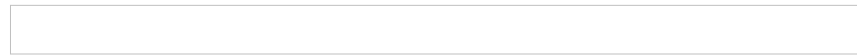
[Classification and Prototype](#)

6The difficulty in researching or classifying portable rolled paintings from the Spanish Colonial era is that scholars have studied them using varied terminology. Some scholars classify them as “sargas” (Toussaint 1967; Donahue-Wallace 2008). The term “sarga” is derived from the Latin word *serica* (silk), and is “a feminine-gendered noun that designates a type of cloth with diagonal ridges (serge, twill) or a fabric painted in oils to be hung on walls like a tapestry.” (Vox 1964). The term “sarga” seems to indicate the purpose for which these paintings were intended.

They were ornamental paintings of large format, without frames, that were used as curtains, banners, wall hangings, and dust coats for altarpieces during Lent (Rallo 2002). They could have also been used as tabernacle covers or on side altars in churches.

7This type of painting has also been referred to as a “rolled painting” (Huckins 2011; Bargellini and Komanecky 2009), its Spanish equivalent, “lienzo de enrollar” (Morgado 1991), an “enrollado” (roll-up canvas) (Kimbrow et al 2009) or as a “banner” (Baer 1961). Adding to the difficulty in research and classification is the fact that Spanish Colonial art has been poorly documented until recent times, and recent scholarship has only produced a few brief references to this type of painting. Paintings were often rolled (sometimes onto a temporary wooden baton) to facilitate travel to the missions (Sheridan and McCormick 2011), so it can be difficult to decipher if a rolled painting was also intended to be a portable painting. However, if a painting has an accompanying wooden carrying case, it is safe to say it was indeed intended to be a portable object. The following photograph, published in *Artes de México* Número 65, illustrates a sarga being used in missionary work. Apart from these few references, information on this type of painting is scarce.

Figure 2 Missionary in the Tarahumara region



[Zoom Original \(jpeg, 48k\)](#)

Photograph showing a portable rolled sarga painting in use.

© published in *Artes de México* (Número 65). Provided by Almerindo Ojeda.

8This unique type of portable rolled sarga painting used by the Franciscan missionaries during the California Mission period can be seen as an adaptation of a traditional sarga painting because of its inclusion of an Asian art feature, the wooden baton onto which the painting can be rolled, making it a scroll. The inclusion of this feature illustrates the direct influence of Asian art on Spanish Colonial art during the eighteenth century through the early nineteenth century when there were strong trade ties as well as artistic exchange between Asia and Latin America.

9One example of a prototype for the Spanish Colonial sarga paintings is *Madonna of the Snows*, a watercolor on traditional Japanese paper, from the late sixteenth to the early seventeenth century. This painting was created in the workshop of the Seminary of Painters, the largest Catholic art academy founded by the Jesuit missionaries in Japan in 1583. The strongest Japanese influence on the painting is the method of framing, the kakemono (hanging scroll), which was framed by textiles like brocade or silk, and had a wooden scroll at the bottom onto which it could be rolled (Bailey 2005).

Fig. 3 *Madonna of the Snows*



[Zoom Original \(jpeg, 164k\)](#)

Japanese painting with gold on paper which rolls up into a scroll, c.1583-1614.

© Twenty-Six Martyrs Museum, Nagasaki

[Surviving Examples](#)

- 2 The current known examples of Spanish Colonial rolled portable sargas in the California Mission co [\(...\)](#)
- 3 Spanish Colonial rolled portable sarga paintings have been identified by the author at the Denver [\(...\)](#)

10The author is aware of only five surviving examples of Spanish Colonial portable rolled sarga paintings in the California Mission collections which retain their original wooden attachments.² The fact that so few have survived makes these paintings extremely rare artifacts. The Carmel Mission houses two such examples, *The Divine Shepherdess* and *Christ With Crown of Thorns*. There may be additional examples of sargas within the California Mission collections that have not been documented. However, the likelihood that many others survive with their original wooden attachments is minimal. There are also a few other examples of sargas scattered throughout museum collections in the United States.³

- 4 The additional known examples that do not retain their wooden attachments are: Mission San Raphael [\(...\)](#)

11Besides the five known examples in the California Mission collections which retain their original wooden attachments, there are at least six additional examples that do not retain their wooden attachments.⁴ These paintings have had their attachments removed during conservation treatment and have been framed. Sadly, this may have become the fate of many sargas over the years. Because of a lack of knowledge of this unique genre of painting, the historical significance and original construction materials of these paintings have not always been understood and valued by those entrusted with their care. In order to honor the integrity of this historic object, its original wooden attachments, which demonstrate the painting's function, should be respected and preserved.

[Technical Description and Condition of *The Divine Shepherdess*](#)

12 *The Divine Shepherdess* had been hanging in the library of the Carmel Mission Convento Museum for a minimum of two years before it was examined by the author in August 2012. Previous to being hung in the library, the painting had been rolled and stored in its case in one of the museum rooms for an unknown amount of time. The painting measures 54 inches by 41 inches. It is unsigned and the provenance is not definitive as the Carmel Mission records do not indicate when the painting arrived at the mission. It is likely that it came from Mexico or Spain and dates from the late eighteenth to the early nineteenth century.

[Auxiliary Support](#)

13 The painting hangs from a wooden baton with turned wooden finials onto which the painting can be rolled and placed in the accompanying wooden carrying case. The top of the canvas is attached to the wooden baton by being inserted into a slot between the two half rounds that make up the circular wooden baton. There are wooden pegs that go through the dowel which secure the canvas inside the slot. The painting hangs from the rear side of the baton.

Fig. 4 *The Divine Shepherdess*



[Zoom Original \(jpeg, 72k\)](#)

Detail of canvas attachment to the wooden baton.

© Megan Crouch.

14 The canvas is attached to the wooden carrying case on the bottom of the canvas by an adhesive, and several nails. Due to the yellowed and brittle appearance of the adhesive, it is most likely a natural protein-based animal glue, such as gelatin.

15 The wooden baton and carrying case are made of wood, most likely pine, which has been painted or stained a dark reddish brown. The wood currently has many dents, accretions, dirt, dust and cracked and flaking paint. The damage is the result of wear and tear since the traveling case would have been handled frequently. The cracking of the paint layer on the wooden attachments was most caused by water damage due to evidence of water stains.

Fig. 5 *The Divine Shepherdess*



[Zoom Original \(jpeg, 76k\)](#)

Detail of the painting rolled on its wooden dowel and placed in its wooden case.

Primary Support

16The primary support of the painting is a linen canvas with a very fine plain weave of alternating warp and weft threads. There is a substantial amount of surface dirt, dust, dead insects, and a few active dust mites on the verso of the canvas. The canvas has become detached from the wooden baton in several areas along the top of the painting, most notably with a tear in the top central area of the canvas. The tear runs parallel to the wooden baton, and is approximately 4 inches long. When the canvas is rolled onto the baton, it bends along the line of attachment, causing this area to become weak. The motion of rolling, as well as the incessant strain placed upon the canvas by the heavy wooden carrying case, has resulted in a tear.

17

Fig. 6 *The Divine Shepherdess*



[Zoom Original \(jpeg, 240k\)](#)

Detail of the tear along the top of the canvas, verso.

© Megan Crouch.

18In addition to the large tear, there are a few small tears in the canvas. There is also a high degree of planar distortion seen through the vertical undulations running across the canvas which were caused by the weight of the wooden carrying case pulling on the bottom of the canvas. Moisture damage is evident on the verso of the canvas in the form of stains.

Ground and Paint Layers

19The painting has a thin glue based ground layer, tinted with red oxide. The ground layer appears to be intact but has been degraded surrounding areas of paint loss. The paint layer is oil based and was built up with very thin layers of brushstrokes. The fact that so much of the paint layer has survived is most likely due to the flatness of the paint's impasto. The painting has an overall warm tone due to the red oxide ground layer. The palette colors mainly consist of reds, blues and greens. There is a significant amount of dirt and dust on the surface of the painting. There are also several dead insects along with insect droppings, multiple accretions, and most likely a layer of candle fat residue.

Fig. 7 *The Divine Shepherdess*



[Zoom Original \(jpeg, 148k\)](#)

Detail showing evidence of surface dirt and dust.

© Megan Crouch.

20 There are several conservation issues that develop from the painting's aspect of portability. Of all the threats the painting has faced and will continue to face, the aspect of portability has arguably made the painting the most vulnerable to mechanical stress and damage due to its construction, the way it has been frequently rolled and unrolled, and its method of use. Ironically, the aspect of portability may also have saved the painting from complete destruction due to the long periods of time it has spent rolled and stored safely in its wooden case.

21 The repetitive motion of rolling and unrolling the painting has had damaging effects to the paint and ground layers. This can be seen through the network of cracks covering the entire painting. The fact that many of the areas of paint cracks and paint loss occur on top of creases in the canvas provides evidence that the damage was caused by the rolling and unrolling of the canvas. It is likely that the design of the painting to roll facing inward rather than outward has contributed to the overall cracking and flaking of the paint layer. Also, the paint layer near the top of the canvas has been abraded from its direct contact with the rough and uneven surface of the wooden baton.

Fig. 8 *The Divine Shepherdess*



[Zoom Original \(jpeg, 812k\)](#)

Detail of the network of cracks with loss of paint and ground.

© Megan Crouch.

22 Apart from the risk of mechanical abrasion to the painting posed by the act of transporting the painting itself, the way in which the painting was used may have also caused mechanical abrasion. Gerónimo de Mendieta's 1596 book, *Historia Eclesiastica Indiana*, illustrates how sargas may have been damaged by mechanical abrasion while being pointed at with a stick, "so that with a stick...he could point to the part he wanted to." (Mendieta, 1597). There are several tears with paint loss and abrasions on the painting that may have indeed been caused by its method of use, the pointing of sticks. These areas appear all over the painting, and although we can only speculate how they got there, it is likely that some of these abrasions were due to its method of use.

[Varnish Layer](#)

23The painting's varnish layer has discolored and oxidized. The discoloration is especially obvious in the skin tones of the Virgin, Christ child, angels and on the sheep. The varnish is most likely a natural resin varnish due to its yellow-greenish fluorescence when viewed under a handheld UV light torch. Since there is no evidence the painting has previously been restored, the varnish layer is most likely original.

Fig. 9 *The Divine Shepherdess*



[Zoom Original \(jpeg, 340k\)](#)

Evidence of discolored varnish.

© Megan Crouch.

- 5 Mold is the collective term for a wide range of specialized fungi which feed on the organic compon [\(...\)](#)

24Of all the conservation issues associated with the painting, the most significant issue at the time of examination in August 2012 was the active mold found growing on both the recto and verso of the painting, covering approximately 20% of the surface area.⁵ Mold was determined to be the greatest threat at to the painting at the time because of its potential to degrade the painting, and therefore became the main focus of study for the author. Mold abatement for paintings is essential, as paintings provide rich nutrients for the mold such as cellulose, gesso and primers containing animal glue, organic pigments and organic paint binders (Peterson and Klocke 2012).

Fig.10 *The Divine Shepherdess*



[Zoom Original \(jpeg, 20k\)](#)

Detail of mold growth next to the bottom angel on the left side of the painting.

© Megan Crouch.

[**Fungal Attack and *The Divine Shepherdess***](#)

[**Site Description**](#)

25When mold was discovered growing on *The Divine Shepherdess*, the painting

was hanging on an interior adobe wall in the library of the Carmel Mission Convento Museum. There was evidence of water damage on several of the adobe walls, including the wall where the painting was hanging. At the time of examination, the environmental conditions in the library were humid and dark, with little air circulation. The temperature was approximately 68°F. There was a dehumidifier in the room that displayed a recording of 70% humidity. Both the temperature and humidity levels were within the ideal range for the growth of mold (Nyberg 2005).

26The mold was concentrated in small circular colonies of a light greyish color and had a fuzzy appearance due to the thread-like flora of the blooming mold spores. The colonies appeared on most areas of the recto and verso of the painting, but were more obvious on the darker areas of the painting than the lighter areas. The mold is most likely a direct result of the water damage the painting has sustained, indicated by the water stains on the verso of the canvas. When the mold was discovered, the painting was removed from its hanging position and taken to a makeshift climate-controlled conservation studio provided by the Carmel Mission's conservator. The painting was kept in isolation from all other objects until treated.

Fungus Identification

27In order to identify the fungus growing on *The Divine Shepherdess*, a sample was taken from a colony on the surface of the painting, using a Mold Armor® Test Kit purchased at a local hardware store. Once the sample was collected, it was sent to the Mold Armor® laboratory for analysis of the type of mold present. The identification of the mold was necessary to determine health hazards, the degree of threat the mold posed the painting and to determine treatment options. The laboratory analysis from the mold sample taken represented semi-quantitative results indicating that the genus "*Penicillium* sp." was identified. *Penicillium* was described on the laboratory report as "A worldwide saprophytic fungi, being isolated from dead plant material and soil." (Mold Armor® 2012). *Penicillium* is a ubiquitous fungus and is found in nearly every environment (Dicus 2000).

Limitations

28There are limitations posed by the sampling technique used in this study. For the culturing method selected, only the structures that are viable or grow on the sampling media are cultured since the test culture media does not support all species of growth. Furthermore, only the genus of the mold was identified. Within a genus there are several species, each with their own unique set of growth requirements and risks posed to both the painting and the conservator. Without knowing the species, it is not possible to determine what specific risks are involved.

Health and Safety

29The *Penicillium* genus does contain species that can have adverse health effects, both pulmonary and respiratory (Fairs et al 2010). Some species are known to produce mycotoxins (Ellis 2013). Even though it was not possible to identify the species of *Penicillium* present on the painting, health and safety parameters were established on the grounds that the mold was a potential threat to human health. Personal protective gear such as an N-95 respirator mask, protective clothing and eyewear and nitril gloves were worn when handling and treating the painting.

Fungus Eradication Treatment on *The Divine Shepherdess*

Topical Treatment for Mold Growths

30The first step in the treatment plan was to remove the painting from its environment and treat the visible mold growths with a topical chemical solution. A solution of equal parts ($\frac{1}{4}$ c. to $\frac{1}{4}$ c.) ammonium and alcohol with a drop of acetone was used. This solution has been used by Conservator Linda Wilde to successfully treat many paintings (Wilde 2013). To perform the treatment, a cotton swab was dipped in the solution and the swab was gently dabbed onto the localized mold colonies. Care was taken to apply the smallest amount necessary to the mold colony without leaving any residue on the painting because the different chemicals in the solution pose risks to the painting. For instance, ammonium can remove the red oxide ground layer where the paint is thin or where it is exposed between cracks in the paint layer. The technique was very effective, and all of the visible mold colonies were eradicated from the recto and verso of the painting.

Environmental Control

31Of the main factors that contribute to the degradation of paintings, temperature and relative humidity are perhaps the most important (Mills and White 1994). An attempt was made to control the environment in the library to make it uncondusive to the growth of mold. The goal is to reduce the relative humidity to a 45% threshold, at which point mold cannot flourish. It is also important that the relative humidity does not fluctuate or spike, but remains constant. However, the museum does not have a climate control system, making the temperature and relative humidity difficult to control. To decrease the humidity, a dehumidifier was placed in the room and was fitted with a draining tube that drains the water extracted from the environment to the outside. With

this improvement, the tray in the dehumidifier will no longer need to be emptied manually. Prior to this, the dehumidifier would shut off when the tray of water was full.

32 Measures were taken to secure the room itself by weather stripping the doors leading to the outside, plugging a hole in one of the doors and blocking off access to the attic. These improvements provided further protection from the elements. A digital environmental monitoring device was placed in the room to prevent future mold outbreaks.

An Alternative Treatment

33 Since treating *The Divine Shepherdess* for mold growth, the author has had time to reflect on the treatment that was done, and has gained additional experience treating paintings for mold growth. This has been accomplished through an internship position with Conservator Elise Yvonne Rousseau at the private art conservation studio Art Conservation de Rigueur in San Francisco, CA which specializes in mold and pest abatement. The author would like to add the following information and case study that illustrates a more thorough and up to date plan for mold remediation for a painting.

Fungus Identification

34 When mold is discovered on a painting, it should initially be determined whether the mold is in an active or dormant state. This can be done through an APT bioluminescence test which tests for CFU's (colony forming units). The test results will help determine whether it is safe to handle or transport the painting without posing health risks to the conservator, and risking the contamination of other artifacts. Visible mold growths on paintings are the blooming flora, but it is the mycelium architecture of the mold that is deeply imbedded in the painting that needs to be eradicated in order to successfully treat a painting for a mold infestation.

Encapsulation, Anoxia and CO Treatment

35 Oxygen deprivation and CO treatment is the most thorough way to treat a mold outbreak because of its dehydrating factor which causes the cells of the mycelium to fracture, collapse, and burst open. This ensures that the mold cells are incapable of reproducing. If this point is not reached, the mold will remain dormant until the conditions allow it to flourish again. CO is able to penetrate all the materials that make up a painting (wood, fibers, etc.) and is able to successfully attack the mold. Topical treatments (such as the treatment done on *The Divine Shepherdess*) and vacuuming do not ensure that the mold cells reach

the point where they burst open. Therefore, these treatments cannot be relied upon to ensure that all mold cells are incapable of reproducing (Rousseau 2013).

- 6 For further reading on encapsulation, anoxia and inert gas treatments for museum objects, refer to ([...](#))
- 7 For more information regarding current approaches using anoxia and CO to treat objects for insect ([...](#))

36 There has been much research since the 1980's on controlling insect pests in museum collections by treating objects with encapsulation and oxygen deprivation along with nitrogen, argon and CO gas treatments.⁶ Over time, it has been learned that insect pests and microbials are concomitant. Hence, these treatments are now being implored for microbial and fungal remediation.⁷

[Case Study: Ida Kohlmeyer Painting](#)

37 The following case study outlines the mold abatement treatment to a large 6 ft. by 7 ft. oil on canvas painting by Ida Kohlmeyer. The painting dates from 1974 and is owned by a private client. The painting presented an active mold outbreak on both the recto and verso of the canvas covering approximately 30% of the surface area. The *Cladosporium* and *Alternaria* species were both identified through the use of an ATP bioluminescence test.

Fig. 11 Ida Kohlmeyer painting



[Zoom Original \(jpeg, 120k\)](#)

Detail showing active mold growth on the verso of the painting before treatment.

© Elise Yvonne Rousseau.

38 Once it is determined that mold growths on a painting are active, the next step in treating the painting for mold abatement is encapsulation. To encapsulate the Ida Kohlmeyer painting, it was placed inside a non gas-permeable enclosure created with Marvelseal™ measuring 76 inches by 90 inches (slightly larger than the painting) that was already heat-sealed closed on three sides. Once the painting was placed inside the encapsulation envelope, acid free blue board sheets with Ageless™ oxygen scavenger packets attached to the boards were placed inside the encapsulation on either side of the painting to create an anoxic environment. 104 oxygen scavenger packets were used in total. Six large bags of dessicant (silica gel pre-conditioned to 45% RH) were placed inside the envelope on the ground next to the painting to counteract any condensation formed as a by-product of the oxygen scavengers. The encapsulation envelope was heat-sealed closed and was left for four weeks (three weeks being sufficient) for the anoxia treatment. An indicator that had been placed inside a window in the

envelope showed that the oxygen was then depleted from the environment (Rousseau 2013).

39 To begin the CO₂ treatment, pure CO₂ gas was pumped into the envelope through a gasket valve to billow the envelope up like a pillow. Twenty pounds per volume of the envelope was used to increase the CO₂ level to 85%. This percentage was maintained for the duration of the treatment of four weeks. The external environment surrounding the bubble was monitored around the clock to ensure that the CO₂ level never went over 1,000 ppm. This kept the CO₂ level safe for people outside the encapsulation. No leaks were detected.

Fig. 12 Encapsulation envelope



[Zoom Original \(jpeg, 152k\)](#)

The encapsulation envelope surrounding the painting during CO₂ treatment.

© Megan Crouch.

40 The CO₂ was then pumped through a vacuum to the outside, and the envelope was removed from the painting. The recto and verso of the painting were vacuumed with a HEPA filter to remove dead cellulose material, detritus and acidic dust, debris and other pollutant particulate matter as well as any remaining volatile organic compounds since dead cells can emit harmful volatile organic compounds. The removal of this material helped to neutralize the acidic pH, returning it to an alkaline balance.

- 8 For more information regarding treating objects for fungal attack with topical solutions, please see [...](#)

41 The painting's surface was gently brushed with a soft sable hair brush and was treated with a topical solution of 3:1 Isopropyl alcohol or ethanol and distilled water. This was followed by repeated vacuuming and spot cleaning to remove staining caused by the mold. For this step, a gel with a chelating factor can be used with various chelating factors being tested to find the most effective one.⁸

42 The painting was then covered with a UV protective Beva varnish. Before it was re-mounted on the wall, it was recommended that an Art sorb™ (silica gel pre-conditioned to maintain a designated RH) sheet be placed behind the painting. The encapsulation, anoxia and CO₂ treatments were successful and all mold was completely eradicated from the painting.

[Conclusion](#)

43 Portable rolled sarga paintings from the Spanish Colonial era such as *The Divine Shepherdess* served an important function and were widely used, yet given their portable nature and the frequency with which they were used, few have survived. This leaves us with a genre of paintings that are few, fragile, and forgotten. Mold is simply one of the many conservation issues that has the potential to degrade sargas like *The Divine Shepherdess*. When active mold was found growing on the painting, the mold colonies were treated with a topical solution. The author has since had experience working with the current and more effective mold remediation plan for a painting which includes encapsulation, anoxia and CO treatments. This method has been explained through a case study of a painting that was successfully treated for fungal attack.

44 The understanding of the historical significance, construction materials and conservation issues of sargas in the California Mission collections have revealed how important it is to preserve them. Because of the vulnerability of these paintings, those entrusted with their care must diligently monitor their condition, and advocate for their conservation to ensure that the few remaining sargas are preserved along with their original wooden attachments. These paintings deserve their own classification and to be studied as a unique genre within the broader art historical context of Spanish Colonial painting. This is something that, to the author's knowledge, has not been done before. Additionally, more research on the construction materials and current condition of the remaining sarga examples in the California Mission collections is needed.

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Notes

1 After having the apparition, Fray Isidore commissioned a painting of the vision describing in detail to the artist how the virgin should appear, and the resulting image became the standard iconography for the image of the Divine Shepherdess (Huckins 2011).

2 The current known examples of Spanish Colonial rolled portable sargas in the California Mission collections that retain their wooden attachments are as follows: the Carmel Mission - *The Divine Shepherdess* and *Christ With Crown of Thorns*; Mission San Buenaventura - *The Divine Shepherdess* by José de Páez (only the wooden baton remains) and *St. Francis of Assisi*; Mission San Luis Obispo - *San Juan Bautista* by José de Páez. Several of these examples are pointed out by Dr. Pamela Huckins in her PhD thesis, *Art of the Alta California Mission Churches, 1769-ca. 1834*, 2011.

3 Spanish Colonial rolled portable sarga paintings have been identified by the author at the Denver Museum of Art, the Brooklyn Museum of Art, and the Walters Art Museum. Some of these examples have retained their wooden attachments.

4 The additional known examples that do not retain their wooden attachments are: Mission San Raphael-*St. Raphael*; Mission Santa Inés-*St. John of God*. There are also four examples at the De Saisset Museum (which houses items from Mission Santa Clara de Asís) that have been conserved and framed and do not retain their wooden attachments.

5 Mold is the collective term for a wide range of specialized fungi which feed on the organic components of paintings (Perry 1990). Since all the fungi that colonize cultural heritage objects are considered “molds” as well, both terms will be used interchangeably.

6 For further reading on encapsulation, anoxia and inert gas treatments for

museum objects, refer to the following Getty Conservation Institute publications: “Inert Gases in the Control of Museum Insect Pests” by Charles Selwitz and Shin Maekawa, “The Use of Oxygen-Free Environments in the Control of Museum Insect Pests” by Kerstin Elert and Shin Maekawa and “The Feasibility of Using Modified Atmospheres to Control Insect Pests in Museums” by Michael K. Rust and Janice M. Kennedy.

[7](#) For more information regarding current approaches using anoxia and CO to treat objects for insect pests and microbial remediation, please refer to: “Approaches in Comprehensive Mold Remediation and Recovery”, a poster session that will be presented by Elise Yvonne Rousseau at the AIC Annual Conference in San Francisco, CA in May 2014.

[8](#) For more information regarding treating objects for fungal attack with topical solutions, please see: STAVROUDIS, C., “Superstorm Sandy: Frontline Advice for Dealing with Mold and Salvaging Electronic Devices”, in *WAAC (Western Association for Art Conservation) Newsletter*, January, 2013, Vol. 35, No.1, pp. 11-14.

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List of illustrations

Caption A portable rolled sarga painting from the Carmel Mission collection.

Credits © photographer Dennis Wyszynski

□ **URL** <http://journals.openedition.org/ceroart/docannexe/image/4093/img-1.jpg>

File image/jpeg, 136k

Title Figure 2 Missionary in the Tarahumara region

Caption Photograph showing a portable rolled sarga painting in use.

Credits © published in *Artes de México* (Número 65). Provided by Almerindo Ojeda.

□ **URL** <http://journals.openedition.org/ceroart/docannexe/image/4093/img-2.jpg>

File image/jpeg, 48k

Title Fig. 3 *Madonna of the Snows*

Caption Japanese painting with gold on paper which rolls up into a scroll, c.1583-1614.

□ **Credits** © Twenty-Six Martyrs Museum, Nagasaki

URL <http://journals.openedition.org/ceroart/docannexe/image/4093/img-3.jpg>

File image/jpeg, 164k

Title Fig. 4 *The Divine Shepherdess*
Caption Detail of canvas attachment to the wooden baton.

□ **Credits** © Megan Crouch.

URL <http://journals.openedition.org/ceroart/docannexe/image/4093/img-4.jpg>

File image/jpeg, 72k

Title Fig. 5 *The Divine Shepherdess*

Caption Detail of the painting rolled on its wooden dowel and placed in its wooden case.

□ **Credits** © Megan Crouch.

URL <http://journals.openedition.org/ceroart/docannexe/image/4093/img-5.jpg>

File image/jpeg, 76k

Title Fig. 6 *The Divine Shepherdess*

Caption Detail of the tear along the top of the canvas, verso.

Credits © Megan Crouch.

□ **URL** <http://journals.openedition.org/ceroart/docannexe/image/4093/img-6.jpg>

File image/jpeg, 240k

Title Fig. 7 *The Divine Shepherdess*

Caption Detail showing evidence of surface dirt and dust.

Credits © Megan Crouch.

□ **URL** <http://journals.openedition.org/ceroart/docannexe/image/4093/img-7.jpg>

File image/jpeg, 148k

Title Fig. 8 *The Divine Shepherdess*

Caption Detail of the network of cracks with loss of paint and ground.

Credits © Megan Crouch.

□ **URL** <http://journals.openedition.org/ceroart/docannexe/image/4093/img-8.jpg>

File image/jpeg, 812k

Title Fig. 9 *The Divine Shepherdess*

Caption Evidence of discolored varnish.

Credits © Megan Crouch.

□ **URL** <http://journals.openedition.org/ceroart/docannexe/image/4093/img-9.jpg>

File image/jpeg, 340k

Title Fig.10 *The Divine Shepherdess*

Caption Detail of mold growth next to the bottom angel on the left side of the painting.

□ **Credits** © Megan Crouch.

URL <http://journals.openedition.org/ceroart/docannexe/image/4093/img-10.jpg>

File image/jpeg, 20k

Title Fig. 11 Ida Kohlmeyer painting

Caption Detail showing active mold growth on the verso of the painting before treatment.

□ **Credits** © Elise Yvonne Rousseau.

URL <http://journals.openedition.org/ceroart/docannexe/image/4093/img-11.jpg>

File image/jpeg, 120k

Title Fig. 12 Encapsulation envelope

Caption The encapsulation envelope surrounding the painting during CO treatment.

□ **Credits** © Megan Crouch.

URL <http://journals.openedition.org/ceroart/docannexe/image/4093/img-12.jpg>

File image/jpeg, 152k

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Megan Crouch, « Case Study of *The Divine Shepherdess* Painting », *CeROArt* [Online], EGG 4 | 2014, Online since 02 April 2014, connection on 22 July 2018.
URL : <http://journals.openedition.org/ceroart/4093>

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MA Conservation of Fine Art (Distinction) Painting Conservation specialty from Northumbria University (2013), Level 3 City and Guilds of London Certificate from The London School of Picture and Frame Restoration (2010), BA in Art History (Magna Cum Laude) from Arizona State University (2007). The author is currently a Postgraduate Intern at Art Conservation de Rigueur in San Francisco,

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