A PRELIMINARY EXAMINATION OF A STABILIZED VIDEO RECORDING OF LARGE, UNIDENTIFIED AQUATIC ANIMALS IN SAN FRANCISCO BAY RECORDED ON JANUARY 26, 2004.

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ABSTRACT: *The videotaped animals recorded in San Francisco Bay by William and Robert Clark do not appear consistent with the dimensions, behavior, capabilities, and/or characteristics of known species, phenomena, and design requirements, but do compare favorably by morphology and behavior to previously reported animals in the area, and that of the Type III Animal proposal. The video record suggests the possibility of large, formally un-described marine animals in proximity to the eastern Pacific Ocean coasts and associated waterways.*

INTRODUCTION

On January 26, 2004 at approximately 12:35 hours, twin brothers and San Francisco residents William ("Bill") and Robert ("Bob") Clark videotaped (JVC Super VHS, Model GR-SXM 335U) images from a hillside position in proximity to the municipal pier and approximately 25-30 m. above the surface of the San Francisco Bay at an elevated, observational angle of approximately 86.3o. The captured images appear to be large, unidentified marine animals displaying multiple behaviors and movements at the water surface, in an area proximate to the Angel and Alcatraz islands in San Francisco Bay, and at an approximate distance of 3 km. The unidentified, serpentine animals appear to occupy a general position approximately 2 km. from the southwest shores of Angel Island.

This 2004 observation was one of the multiple, San Francisco Bay observations the Clarks have reported. Other reported observations, at least seven in total, were recorded in detail in 1985, 1986, 1987 and 2004. The Clarks appeared to freely discuss their observation with the general public, but withheld the actual video for what they believed was legitimate scientific analysis and/or inquiry.

The Clark observation of January 26, 2004 scored 6 of a possible 11 points on a quality control matrix previously proposed by the author (2001), and is thus considered for further evaluation and inclusion into the author's dataset. This evaluation and analysis reviews only the videotape record from the January 26, 2004 observation.

Low tide on Monday, January 26, 2004 for Angel Island was .65 m. at 09:11 hrs. After the slack, flood tide began at 11:54 hrs. at 0.01 knots. The maximum flood on this date was reached at 14:46 hrs. at 0.92 knots. High tide (1.42 m.) was reached at 14:51 hrs. Tidal conditions for Alcatraz Island during the observation were as follows: at 09:11 hrs., low tide (.65 m.) was reached, followed by the initial flood stage at 10:39 hrs. at 0.01 knots, with the maximum flood listed at 1.14 knots. and reached at 13:33 hrs. (WWW Tide/Current Predictor). The activity at the time of the recording (12:35 hrs.) was during the flood of the incoming tide, which registered 1.42-1.48 m.

According to the United States Geological Survey (USGS), the predominant current proximate to the relevant area of Angel Island during high tide is west to east at 2.0-2.1 knots. The average depth for the approximate area of this observation is between 87-125 m. (USGS). The harbormaster for the area has advised the Clarks that the water depth of the area was approximately 50 m. (Clark, 2005b).

METHOD

The original Super VHS recorded video was obtained in a digitized format to facilitate stabilization and analysis. The digital video footage was frame stabilized with 1-3 stationary reference points using the AVID Adrenalin System. The video was then separated into 588 separate still-frame images by a video forensics police investigator for additional evaluation. At that time, it was suggested that clearer imaging may be obtained by subjecting the original recording, or a direct analog copy, to the frame stabilization utilized in this examination (Cook, 2005a).

Subsequently, the video, converted into an AVID Project OMFI format by Inspector R. Tolosa of the San Francisco Police Department Forensic Video Analysis Unit, was obtained from the Clarks and analyzed utilizing the forensic video analysis AVID Adrenalin System with 1-3 stationary reference points. Three recorded events were initially separated and isolated from the original video by Detective Max Cook of the West Valley City Police Department. One recorded event appeared to display two simultaneous oscillating, or “looping”, movements, with the second and third events possibly displaying two separate, surface-breaching movements. Also obtained from the stabilized video, were versions with manipulated/enhanced contrast, sharpness, and specific magnification and image movement isolation. There were 226 separate still frame images produced of the oscillating or “looping” movements, 54 of the first surface-breaching behavior, with 161 still frame images isolated of the second surface-breaching or possible periscope/spy-hopping behavior.

The examined video record appears to be approximately 209 seconds in length, and recorded images at varied focal lengths up to 50X (the camera lens was capable of a 400X, but was set to a manual position providing for a 50X zoom) . Lens movement may be observed at different points in the video record in what appears to be the videographer’s attempt to focus on the moving images/targets. The original video provides the verbal commentary of the Clark brothers, and a date-stamped segment. The narration includes comments, possibly indicating the frustration of the videographer at the difficulty of tracking and maintaining focus on the distant targets while minimizing the movement of the handheld camera. The comments also indicate that the observers were unsure of the identity of the targets they were recording. At various times, comments are made regarding "birds." Birds are observed at various points of the video, but no birds are visibly identifiable in the immediate proximity of the main targets. An aircraft is heard at the 160 second mark, with a still frame captured and interrupted at the 180 second mark.

DISCUSSION

Informal proposals extended for the identification of the images in the Clark's January 26, 2004 video recording have included suggestions of "sea weed," pinnipeds, cetaceans, birds, wave formations, and deliberate hoax, etc.

It is assumed the "sea weed" suggestion is a comparison of the images made to the Perennial Giant Kelp (*Macrocystis pyrifera*). Giant Kelp is known to grow up 40 cm. per day, reaching a height of approximately 60 m. along the exposed coasts of Alaska to California (McConnaughey, 1988). This gold to brown macro algae projects hundreds of leaf-like blades and rounded, hollow bladders from the flexible stipe. An individual kelp plant is fastened to the bottom of the sea floor by a rhizome-like base, or holdfast. The stationary, individual plant then maintains a nearly vertical orientation, utilizing the hollow bladders as floats to maintain position.

The Clarks have spoken with the area harbormaster, who confirmed that kelp is rarely observed in the bay, and does not grow in the area proximate to the recorded observation (Clark, 2005b). It could be expected that kelp torn from its base by storms and/or wave action, may occasionally drift into the bay as "rafts" with tidal, wind or wave movements. Additionally, a commercial herring (*Clopea mirabilis*) eggs-on-kelp fishery (HEOK) may be present in the bay from December 01 through March 31 as suspended rafts of kelp (California Department of Fish & Game). Another macro-algae candidate could include the Bull Kelp (*Nereocystis luetkeana*), which is known to grow to 30 m. in length, and also grows float-like bladders, and may be considered similarly.

Floating kelp rafts can be observable from an above-surface position, but could not extend above the air/water interface with a discernable height at the estimated distance of the Clark observation. The images in the Clark, January 26, 2004 video recording extend and descend intermittently above the surface, and at a height of approximately 8 m. (Paiva and Slusher, 2005). The flexible stipe does not provide sufficient structural support for extension to the degree required for visibility at the reported distance(s). Additionally, the images in the Clark video move at 8 km/hr. (Paiva and Slusher, 2005) against the 2.0-2.1 knot current (Tide/Current Predictor), and reverse direction, even moving over a second image maintaining position or engaged in a different direction of travel. The images in the video do not move uniformly, or in a direction or manner consistent with known currents or water movements on that day (USGS). Observable water displacement is also not consistent with the suggestion of floating, or even anchored kelp. The author suggests that it is unlikely that the images recorded on this Clark video are of floating kelp masses.

Pinnipeds are known to enter the San Francisco Bay. The species most likely to be observed inside the bay are the California Sea Lion (*Zalophus californianus*) and the Harbor Seal (*Phoca vitulina*), while additional species known to inhabit the exposed coasts of the area include the Northern Elephant Seal (*Mirounga angustirostris*) and the Steller's Sea Lion (*Eumatopias jubatus*).

Sea lions may swim at the surface, intermittently leaping clear of the water (Riedman, 1990). The author has observed this often predictable, grouped swimming behavior displayed by sea lions, presumably minimizing their vulnerability to predators (*Carcarodon carcharias,* etc.) as they swim out to deeper water through a high-risk area to feed. A review of the Clark video, with magnification to selected and successive still frames shows that the hump-like images maintain a nearly single-file position and continuous positional orientation as the images track and change direction. The author was unable to locate a frame or sequence displaying the head and/or flippers of a pinniped, as would be an expected characteristic observation of such swimming behaviors. At no time did the line of humps break formation from the single file track, as would be expected by a group of swimming pinnipeds (Personal Observation).

True seals, or phocids, are known to swim at the surface in a manner differing from that of the sea lions, or otariids. In the wild, phocids swim in near vertical movements from the sea floor to the surface, presumably as a means of minimizing their more vulnerable surface position to predators (LeBouf, et al, 1986). Typically, it may be difficult to observe phocids during their minimal exposure at the surface, which may only be a breach of the surface by the head or nostrils. The calculated dimensions of the recorded images in the video extending above the surface (Paiva and Slusher, 2005) are also in excess of known pinniped species. The author further suggests that the behaviors (swimming and beaching) and morphology displayed by the images in the video are not consistent with known, pinniped behaviors and size ranges.

Cetaceans are also known to enter the San Francisco Bay. Most frequently observed are Gray Whales (*Eschrichtius robustus*) and Harbor Porpoises (*Phocoena phocoena*). Less frequently observed are Pacific White-sided Dolphins (*Lagenorhynchus obliquidens*) and the Dalls' Porpoise (*Phocoenoides dalli*). Occasionally, Humpback Whales (*Megaptera novaeangliae*) have entered the bay and associated waterways.

The largest measured images in the Clark video are within the known ranges of both Gray and Humpback Whales. Whales are also known to breach the surface at a height comparable to that measured by the animals in the video. However, the animals in the Clark video maintain an extended position above the surface for approximately 2.5 sec., and continue to maintain a lower position above the surface without submerging below the air/water interface. The periscope behavior exhibited by the images on the video is likely a deliberate and controlled behavior which appears to be in excess of the known capabilities of larger cetaceans as they are unable to control the momentum of their mass from falling below the air/water interface after breaching. Additionally, if the track-line segments in the video are considered only visible parts of one unit for inclusion within the known size ranges of the larger cetaceans, the flexibility exhibited by the images in the Clark video do not appear to be within the range of flexure of either species of whale. If the image segments are considered independent animals, the grouping would be inconsistent with known mysticete group behavior relevant to this sequence (Walker, 1962). The “spyhopping” behavior displayed by some whale species may produce a similar appearance as that of the images in the video. However, the “spyhopping” behavior is a stationary surface display and is not consistent with the movement displayed by the images in the video. The expected exhalations, or “blows,” could be identified at the distances involved in the video (Personal Observation), but these predictable and lingering exhalations are not observed in the video.

The smallest segments of the recorded images are within the known size ranges of both the Pacific White-sided Dolphin and Dall’s Porpoise. However, the swimming motions and behaviors, both individually and grouped, are not consistent with the known behaviors of either species. Because the behaviors and capabilities of the Clark video images are not consistent with the known abilities and/or behaviors of cetacean species frequenting the area, it is proposed that the video images are not those of a known cetacean species.

Multiple species of sea birds frequent the area. It has been proposed that the images in the video are those of birds flying proximate to the surface of the water or stationed on the surface of the water (Fredericks, 2005). Birds are recorded on the video, mostly passing through the frame at a nearer proximity to the observers. Robert Clark is also heard to make recorded comments on the video incorrectly suggesting the possibility of birds as the objects being recorded, as he had previously observed birds flying in single file above the surface of the water, but not at the greater distance of the recorded images. William Clark, who was recording the animals and had the advantage viewing the targets through the zoom lens, immediately disagreed with the suggestion. A bird is identifiable and recorded passing through the frame left-to-right at greater distance with a normal, wide field of view at the approximate time of 01:42 on the video. A second bird is identifiable and recorded passing through the frame right-to-left at the approximate time of 02:01 on the video with a normal, wide field of view. In each instance the birds are in the lower 1/3 of the frame and appear to be closer to the observers than the target image(s). For birds to be visible at the observed distance, would require the elimination of smaller species as possible candidates for identification, and if observed at a closer distance, to provide an image size comparable to that of the recorded birds in the foreground, would likely record recognizable characteristics, and behaviors.

The largest, and most appropriate specie of bird for consideration as possible candidates for the recorded images, include the White Pelican (*Pelecanus erythrorynchos*), Brown Pelican (*Pelecanus occidentalis*), Cormorants (*Phalarocorax sp*.), Black Footed Albatross (*Diomedea nigripes*), and gulls (*Larus sp*.). None of these species attain the size necessary (McConnaughey, 1988) for practical consideration, when compared to the size estimates of the recorded images (Paiva and Slusher, 2005) or have a swimming motion and/or capability consistent with the water displacement and morphology observed from the images of the videotape.

If the birds are considered as images proximate to, but not on, the surface of the water, the White Pelican's wingspan may place it within the required size range of the recorded segments/images, but the track-line upon which the images move and are observed would not display the pelican's wingspan as would be required for acceptance within the known size parameters. Additionally, for the pelican, or any other large bird, to even approximate the required size range(s) and speed, would require the birds to fly with their wings continuously extended, suggesting flight above the air/water interface. In this condition and position, the observed water displacement is not satisfactorily explained.

At approximately 00:14 in the Clark video, two oscillating, or "looping," movements may be observed. The segments to the left of the centered images appear to cross the shore margin (Cook suggested that this may be due to temperature differences between the two surface types, as known stationary objects also appear to change shape) only to abruptly reverse direction while continuing this revised, direction and continued motion in the precise segment order and reverse angle. At a distance, a flock of birds, especially the White Pelican (Wernert, 1982), may be able to present the image of single file formation, but would be unable, either as individuals or as a formation, to instantly reverse direction and maintain individual position within the formation, and the original observed angle of the formation.

A basic assumption of linear wave theory states that the wave height is constant for a length of crest on the order of the wave length (Denny, 1988). A proposal suggesting the images in the video were waves or wakes would require violation of this basic assumption. The images in the Clark video do not maintain the consistent linear movement and orientation as would be expected if the images were a wave formation. Waves and wakes are identified by Paiva and Slusher (2005) in plates #9hZ, #11D, #29, and #32, of their analysis of the Clark video, and are differentiated from the animate images with a variety of techniques (High Intensities Above Waterline, Displacement Velocity, Gradient Edge Intensity, Spatial Intensity, Intensity Scan Line, etc.), while incidentally demonstrating that the Clark video images cannot be identified as wave phenomena.

TABLE I. A COMPARISON OF THE CONDITIONS AND CAPABILITIES OF SUGGESTED CANDIDATES FOR THE IMAGES VIDEO RECORDED BY THE CLARK BROTHERS ON JANUARY 26, 2004.

Comparable Conditions	Pinnipeds	Cetaceans	Birds	Macro Algae	Wave Phenomena
Size/Length	Yes	Yes	Yes*	Yes*	Yes
Habitat	Yes	Yes	Yes	No	Yes
Region	Yes	Yes	Yes	Yes	Yes
Behavior(s)	No	No	No	No	No
Capabilities	No	No	No	No	No
Agreement	***No***	***No***	***No***	***No***	***No***

An alternative suggestion is that the Clarks deliberately designed and executed, or are the victims, of a hoax. For the video to be successfully produced as an intentionally false record, the target objects would be required to be large enough to be visible at the known distances, and have the capability of moving against the known current and flood tide. The hoaxer would also be required to fashion an object of approximately 6 m. in length and 2 m. in diameter and then extend it above the water surface for at least 2.5 sec. and in water in excess of 18 m. in depth. At one point in the Clark video, there are at least five separate objects or track-lines, with individual segments of separate and independent movement and/or buoyancy, moving in different directions and/or track-lines simultaneously, which would require the associated, five independent and simultaneous sources of propulsion.

Specifically, the Clarks advised the author that swimming pool floats have also been suggested as the identity of the target images (2005b). The typical swimming pool float may range from 30-45 cm in length, and approximately 25-30 cm in height. At the known distances in the video, the swimming pool floats would likely not be visible. Additionally, the objects in the video do not maintain the same elevation and displayed dimensions above the surface of the water. These conditions would not be consistent with the inflexible nature and static buoyancy of the floats. If a more flexible object was utilized, the row of variably buoyant objects would need to be towed, or utilize an alternative source of propulsion. The video clearly shows the target images move against the flood tide, and the lens widening the field of view intermittently; allowing the viewer to see that there is no boat or other apparatus visible and capable of towing manufactured objects. If the Clarks, or any other persons, were able to devise a realistic method as a means of propulsion, it could then be expected that an associated water disturbance (wake or water displacement, etc.) would be visible at some point, which is not apparent in the video.

The author suggests that the objects in the Clarks' January 26, 2004 video are not images of known species or phenomena, or a designed hoax. It is proposed that the images in the video may be an animal the author has labeled the Type III, or Multiple Humped, Animal. This, yet as scientifically un-described, animal was proposed by the author after a review of over 1200 independent observations with an accompanying method for rating accuracy and veracity (2005).

The Type III Animal attains a maximum length of 60.0 meters, with the size class of 10-20 m. total body length (TBL) most commonly reported. The diameter of the body is 3-10% of the TBL. The body is cryptically colored, suggesting a lifestyle adapted for foraging along the dark substrate while minimizing it's presence to predators (large sharks, *Orcinus orca, Physeter macrocephalus*, birds of prey when young), or absorbing the available solar heat at the surface. It is likely, the skin is smooth in appearance and texture, but may also possess an erectile spine arrangement. Depending upon the observer(s)' viewing angle and the available light, these small spines (often described as yellow in appearance) may appear to be hair-like. It is possible the Type III Animal uses this skin system to gain a purchase and maintain position on slippery rocks and/or substrate during feeding or basking behaviors in wave-swept environments.

There are two pectoral fins positioned approximately 30% of the TBL from the head. A dorsal crest or scutes are present, and a mane-like structure has been observed on occasion. The crest is likely a secondary sex characteristic, and has been observed in animals as small as 3.0 m.

The bilobate tail is horizontal in orientation, and appears plated along the dorsal surface. It appears the lobes of the tail may retracted or withdrawn to create a minimal profile, thus reducing drag and energy expenditures in selected environments and situations on the recovery stroke of the swimming motion. This natural armoring may be used as a structural support for the soft-rayed tail during the down stroke of the tail's swimming motion, facilitating and/or increasing the required thrust. The armoring may also serve as a protection from the initial strikes of predators. White Sharks (*Carcarodon carcharias*) may employ an attack strategy of striking and damaging the main propulsive appendages of their prey, thus preventing an escape if the prey species survives the initial attack (Personal Observation, 1989).

The tail may also be used for food collection if the animal strikes into schools of fish-like the Thresher Sharks (*Alopias sp.*) (Compagno,1984), or to stun prey with the concussion or noise generated from the tail, similar to the strategy of the Pistol Shrimps (*Alpheus sp.*) (Walls, 1982).

One observation (#264) in the author's data set described the rattling sound emitted by the tail of a startled, basking Type III Animal like that of a "Gatling gun." The animal may employ the vibrating or "rattling" tail to warn potential rivals or predators of its presence, or to demonstrate aggression.

The cameloid head length dimensions appear to be 5-7% TBL, with the width of the head at 3% TBL. Ears or horns have been observed on occasion. The eyes have been described as green in color, and forward facing, suggesting binocular vision and a predatory feeding strategy.

The mouth is sub-terminal, to ventral in position. The mouth orientation suggests that the Type III Animal likely exploits feeding opportunities primarily at, or near, the sea floor (Nikolsky, 1978). The teeth have been described as fish-like and sharp. The palate appears to be textured and may serve as an organ for crushing or securing prey in the mouth (Storer, et al, 1979). The palate may also be a site for vomerine teeth, or a natrial gland for salt excretion/regulation. A tongue has been observed, and described as long, rigid, and "spear-like". It is possible the structure of the tongue allows the Type 3 Animal to impale and retrieve prey in crevices too small for the head to access. Known reptiles also possess tongues adapted to predation (*Chameleo, Phrynosoma*, etc). The tongue may also be used as an organ to expel water from the oral cavity in a fashion similar to mysticete whales. Large, prehensile lips have also been reported. These lips may aid the animal in browsing and removing small food items from crevices and difficult-to-access substrates, by providing a tactile and/or suction advantage. The ariel senses of the Type III Animal appear to be limited, with observations documenting enhanced, subsurface visual and auditory senses.

The Type III Animal is likely solitary in nature, and may only be found in the presence of conspecifics during breeding season. The Type III Animal has also demonstrated a form of territoriality or aggression towards other species *(Zalophus californianus*) on occasion, possibly as perceived rivals during mating opportunities, or potential competitors to the available food supply.

Type III Animals have been identified with 2-30 humps at the surface of the water, with three being the most common. It appears the animal is capable of swimming in excess of 10 km/h. When the animal is perceived to be swimming rapidly at the surface, it is always with a humped posture and vertical undulations. The hump directly behind the head has been described as stationary with the following humps undulating. When the animal is observed basking, floating motion-less, or swimming slowly, the animal is usually extended. LeBlond and Bousfield (1995) proposed that *Cadborosaurus willsi*, a similar animal, assumed a humped position to more closely approximate the body shape of a fast-swimming thunniform, therefore assuming a more efficient swimming posture. It is possible the Type III Animal employs a similar swimming strategy.

It appears the Type III Animal is behaviorally-oriented towards the air/water interface. Head displays (SH, PB) comprise 49% of all recorded observations. It is likely these behavioral displays have caused the Type III Animal to have been misidentified, on occasion, as a Type I Animal (Long-Necked Animal).

Type III Animals appear to migrate daily towards the shore, or inland waterways, after 00:00 hours, and under the cover of darkness. The animal then returns off-shore, possibly into the open ocean before 06:00 hours, when not engaged in limited activities (exceptional feeding and mating opportunities, etc.).

The Type III Animal has been observed in both hemispheres, but appears to be more common in the northern hemisphere (90% of observations) with a preferred range of 40-50o latitude. The data suggests the animal's preference for the temperate waters over and proximate to the continental shelf, but also the boreal air temperatures of shallow and in-shore waterways.

A seasonal migration has been identified within the Type III Animal’s north-south range (4-60o latitude). During the summer months, the animal appears to migrate as far as 70o latitude, only to return to latitudes in proximity to the equator during the fall and winter months.

With the observation of smaller size-class animals in the higher latitude ranges, it is proposed that the Type III Animal mates and gives birth in these more food-productive and fertile areas for maximum growth rate and survival, and returns to the lower latitude ranges only as adults.

The Type III Animal was observed in 63% of the total recorded observations in proximity to estuaries and/or river confluences. The majority of observations also included geographic or environmental conditions with a proximity to fully, or semi-protected shorelines, multiple islands, offshore banks, and/or strong tidal currents.

The author proposed that the Type III Animal exploits the fertile, brackish waters of estuarine environs throughout the globe. In areas where the Type III Animal has been reported with a greater frequency, large and productive estuaries and/or river confluences were available in the immediate vicinity.

The Type III Animal has been reported in freshwater, and appears to have a preference for seawater of <33% salinity, suggesting the physiology necessary to exploit such a niche.

The Type III Animal possibly ventures into estuaries, and/or up rivers as observed with the large animal in observation #259 (author’s data set). Interestingly, there are more observations of the Type III Animal swimming up rivers and tidal areas against the outgoing tide than with the predominant current. Perhaps the Type III Animal takes advantage of more concentrated animals and organisms for more productive feeding opportunities. It appears the Type III Animal may have the capability to venture overland land for short distances, and/or may not hesitate to negotiate marshes when conditions permit.

The Type III Animal may give birth to precocial young within the relative protection of inland waterways. Animals observed inland are from the extremes of the larger and smaller size classes (4-30 m TBL). The animals observed >5 km inland were, at times, observed on mud flats, and “basking” on exposed banks.

Typically, the areas of observation were of a high (>500-250 mgC/m2/d) phytoplankton production, moderate to high (>500-50 g/m3) zooplankton production, and moderate (300-1.0 g/m2) benthic biomass production. When the mouth placement and morphology of the Type III Animal, and available food are taken into consideration, it is proposed that the Type III Animal likely preys upon moderately sized species of zooplankton and benthic bony fishes (ground fish, etc) and invertebrates. Although, the Type III Animal has been recorded preying upon seabirds, it is proposed that surface species are not the normal or preferred prey items for the animal. Bird predation may be the result of a reflexive strike, or the exploitation of a seasonal or serendipitous feeding opportunity.

The Type III Animal appears to be similar to an animal observed and recorded from many locations throughout the world (Eberhart, 2002). When a comparison of some of the more frequently reported, and similar animals, with the Type III Animal is made, especially particular characteristics, it appears the animals are likely members of the same genus and/or species.

A comparison of the Type III Animal to the "Great New England Sea Serpent (GNESS)," *Cadborosaurus willsi*, an unidentified marine animal observed in proximity to the United Kingdom, and an unknown animal observed in the regions of Scandinavia, and Indochina yielded 100%, 100%, 82%, 92%, 92% agreement, respectively. Using the same comparison criteria, the animals in the Clark video appear to be a Type III (Multiple-Humped Animal), or similar, animal.

CONCLUSION

When a comparison to known species, phenomena, or design requirements is considered in total and within context, the images recorded in the Clark, January 26, 2004 video do not appear to be in agreement with the offered explanations. However, the images are consistent in appearance and behavior with an unknown, marine animal the author has informally labeled as a Type III, or Multiple-Humped, Animal.

The Type III Animal has been recorded as early as 1746, and often regularly in predictable locations for extended periods of time. Though the frequency of the Clark brothers' observations may seem incredible, history also recounts an even greater frequency of very similar observations of what is known as the "Great New England Sea Serpent (O'Neill, 1999)" in the Gloucester Harbor and proximate areas off the Maine coast in 1817 (see period drawing in Appendix). This animal was also observed and reported off other areas of North America's north Atlantic coast from that period to 1975. The author has also reviewed similar, but unrelated, observations of similar animals in the proximate area and associated waterways (2001).

Criticisms of the Clark video have erroneously stated that the video is of little or no value. If the researcher studies the Clarks' video record of January 26, 2004 objectively and in contextual detail, valuable information can be obtained which may corroborate not only the Clark brothers' account, but also the current dataset. If the Clark video and other observations made in the area by the Clarks and other persons are corroborated, their accounts are suggestive of a large, unknown species of marine animal frequenting the eastern Pacific Ocean coasts and associated waterways. The author suggests that it may be productive to initiate a comprehensive study of the video record, and probably the

Clarks' other observations, to enhance the opportunity of formally describing these marine animals through designed collection (Champagne, 2001).

ACKNOWLEDGMENTS

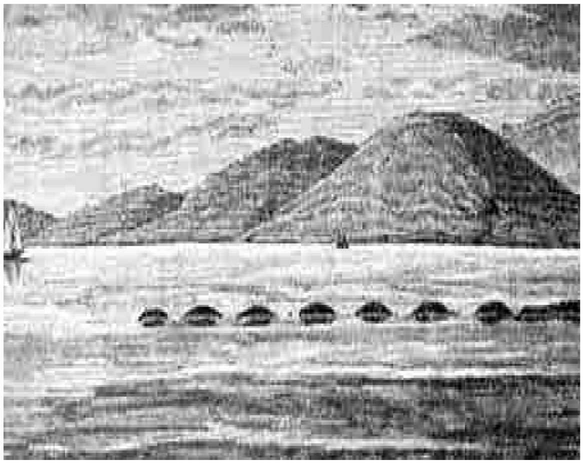
The author is appreciative of William and Robert Clark and their willingness to provide additional information and materials at their inconvenience and expense. Detective Max Cook's technical skills and advice were valuable contributions to the video analysis. Cameron McCormick's dedication to accuracy is appreciated and admired, with his illustrations a welcome addition.

APPENDIX

TABLE 11. Activity/Subject Log of the January 26, 2004 Clark video

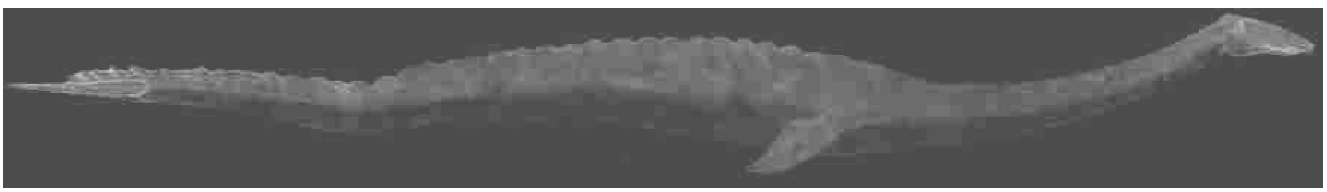
TIME	BEHAVIOR	LENS POSITION
00:03	Surface Breach (Head?)	Normal
00:14	Double Oscillating Movement	Normal
00:20	Direction Reversal	Normal
00:28-00:35	Camera Repositioned	N/A
00:45	Above Surface Movement	Zoom
00:48	Observer Narration Begins	Zoom
00:50	Above Surface Movement	Zoom
00:56	Video Interruption/Change	Normal
00:59	Above Surface Movement	Zoom
01:06	Surface Display by Animal Towards Passing Animal	Zoom
01:19	2 Animals at Surface	Zoom
01:20	Surface Display	Zoom
01:21	Animal at Surface Passes other Animal	Zoom
01:24	Observer Pans Left-to-Right (separate animals)	Zoom
01:30	3 Animals Observed at Surface	Normal
01:42	Bird Passes Left-to-Right at Bottom of Frame	Normal
01:45	Observer Pans Left-to-Right and Back- 5 Animals?	Normal to Zoom
01:57	Animal Surface Display & Submerge	Zoom
02:01	Bird Passes Right-to-Left 1/3 From Bottom of Frame	Normal
02:05-02:16	Surface Displays-Head? (in front of lighthouse)	Zoom
02:17	Ferry Boat and Date Stamp	Zoom
02:30	Video Interruption (Papers)	N/A
02:34	Video Resumes with Date Stamp	Zoom
02:37	Animal at Surface Quartering Away	Zoom
02:48	Second Animal Approaches at Surface	Zoom
02:49	Second Animal Passes by Displaying First Animal	Zoom
02:56	Surface Display at Upper Right of Frame	Zoom
02:59	Surface Displays at Upper Left of Frame	Zoom
03:01	Still Frame of Surface Displays	Zoom
03:07	Camera Reposition- Animal at Surface	Normal
03:13	Observer Pans Right-to-Left (5 Animals?)	Zoom
03:28	Video Interruption/Change	Zoom

** The sequence in the recording provided by Paiva and Slusher incorrectly differs from that of the original video recording. The original video begins at the Paiva and Slusher 02:34 mark and continues according to the increments in the table. Time references are from the Paiva and Slusher copy as that is most likely version to be encountered for subsequent reference.*

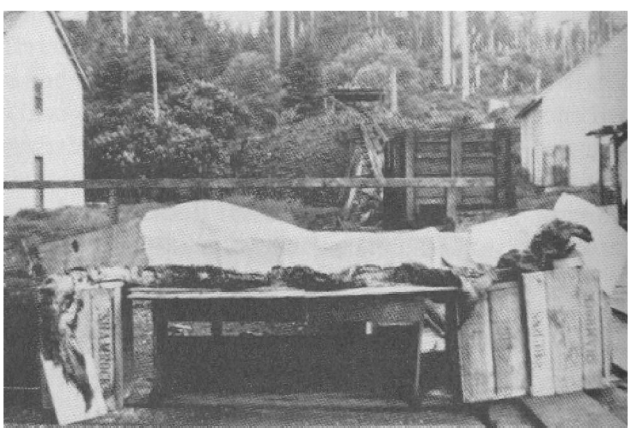


Period drawing (1817) of the Great New England Sea Serpent of Gloucester, Maine.

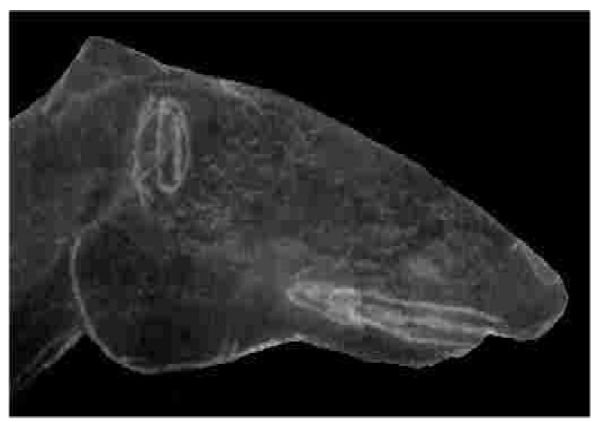
San Francisco Sea Serpent still frame William and Robert Clark; 01-26-04



Type III Multiple-Humped Animal; drawing by Cameron McCormick, 2005



1937 photograph of *Cadborosaurus willsi.*



Type III Animal; drawing by Cameron McCormick, 2005.

TABLE 111. A COMPARISON OF THE TYPE III ANIMAL TO THE IMAGES IN THE CLARK, JANUARY 26, 2004 VIDEO, INFORMALLY REFERRED TO AS THE SAN FRANCISCO SEA SERPENT.

CHARACTERISTICS	TYPE III Animal	SF Serpent
Range (latitude)	30-60o	38o
Season(s) Observed	ALL	Winter, Spring
Area Type	1,2,3,4,5, land	3,4,5
Eccritic Water Temp. (oC)	5-20o	13o
Swimming Method	Humped, w/ vertical undulations	Humped, w/ vertical undulations
Total Body Length	3-60 m	23 m
Head Description	Cameloid	Unknown
Body Description	Serpentine	Serpentine
Tail Description	Horizontal, plated	Unknown
Fin Description	Pectoral only	Unknown
Dorsal Structures	Serrations, mane	Unknown
Type III Agreement	N/A	64%

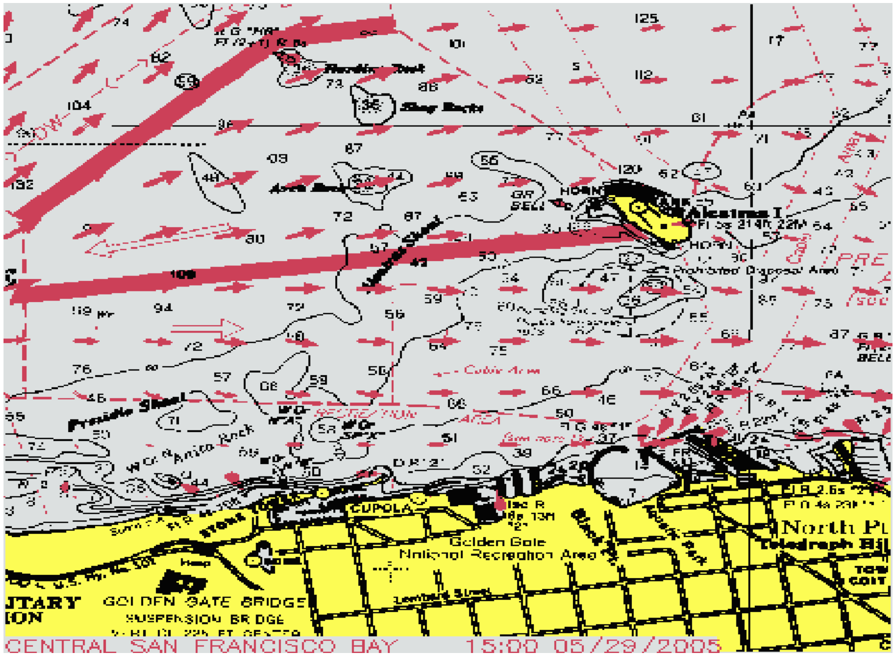


Chart of the currents in proximity to Alcatraz Island, San Francisco Bay (USGS), and the location of the Clark observation position.

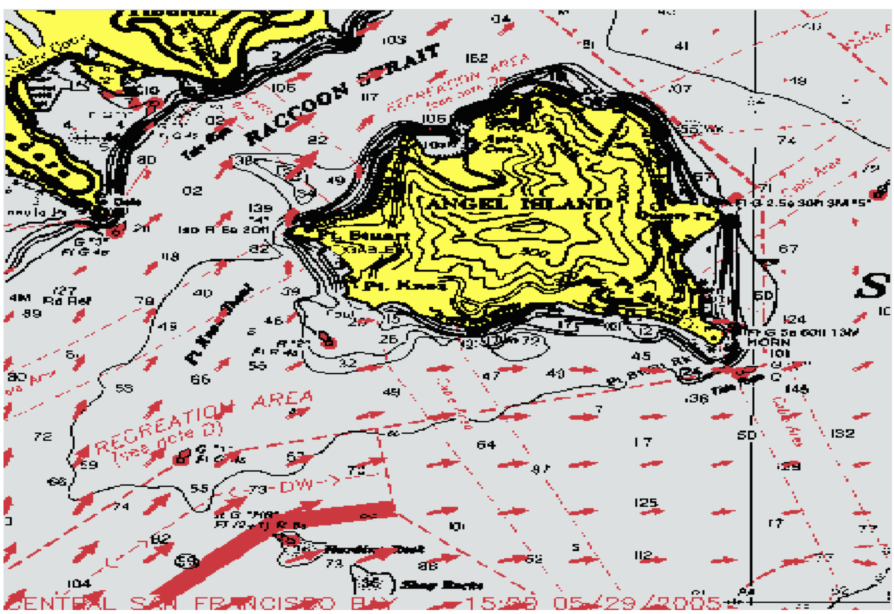


Chart of the currents in proximity to Angel Island, San Francisco Bay (USGS), and the approximate location of the target images in the Clark January 26, 2004 video.

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