Monk Seals in Post-Classical History

The role of the Mediterranean monk seal (Monachus monachus)
in European history and culture,
from the fall of Rome to the 20th century

William M. Johnson

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by

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TABLE OF CONTENTS

Abstract

The role of the Mediterranean monk seal *Monachus monachus* in the history, culture and economy of the Mediterranean region has long remained obscure and subject to error and contradiction. In order to extend historical knowledge of the species beyond the time-frame covered in our companion publication, *Monk Seals in Antiquity*, a review of the available literature was undertaken covering the period from the fall of Rome to the 20th century. This research indicates that the monk seal in the Mediterranean continued to be exploited for its fur, oil, meat and perceived medicinal properties well into the Dark Ages and the Renaissance, albeit on a much-reduced scale than the exploitation witnessed during the Roman era. The species also continued to be a target of Mediterranean fishers, angered over reduced catches and damaged nets. Elsewhere, large, newly-discovered colonies in the eastern Atlantic off the coast of Africa became a lucrative if short-lived industry for French, Portuguese and Spanish explorers. In the Mediterranean, sustained persecution of surviving groups, coupled with increasing human disturbance and deterioration of habitat, appears to have acted selectively against colony formation, leading to an inexorable decline and fragmentation of the population. Although described as 'rare' by science in 1779, the species continued to be a target for collectors from zoos and museums until the early 20th century, when extinctions along broad stretches of coastline first became apparent.

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AN INTRODUCTION TO THE SPECIES

Despite intensive exploitation during the Roman era, including the probable eradication of most large seal herds occupying vulnerable open beaches, the Mediterranean monk seal (*Monachus monachus* Hermann 1779) continued to occupy a wide geographical range until the mid-20th century (Figs. 1 & 2).

Colonies were found throughout the Mediterranean, the Marmara and Black Seas (King, 1956). The species also frequented the Atlantic coast of Africa, as far south as Mauritania, Senegal and the Gambia (Israëls, 1992), as well as the Atlantic islands of Cape Verde (Ronald & Healey, 1976), Madeira, the Canary Islands and the Azores (Brasseur et al., 1997; Johnson & Lavigne, 1999a).

Historically, several interrelating factors have been implicated in its decline.

In terms of direct killing, the seal has been a target of hunters since the Stone Age (Clottes & Courtin, 1994; Johnson & Lavigne, 1999a). Although hunting on an industrial scale peaked in the Mediterranean basin during the Roman era, and in the Atlantic dur-

Fig. 1. Historical range of *Monachus monachus* within the Mediterranean, Marmara, and Black Seas.

Fig. 2. Historical range of *Monachus monachus* in the north-eastern Atlantic.

ing the Renaissance, subsistence exploitation of the animal for its pelt and oil persisted in some areas well into the 20th century.

Similarly, persecution by fishermen, who see the seal as a convenient scapegoat for dwindling catches and damaged nets, was first recorded in the ancient world. Such hostility is also evident in writings from the Middle Ages and Renaissance, and eradication of the animals as fish-stealing, net-destroying pests continues to be cited today as a major

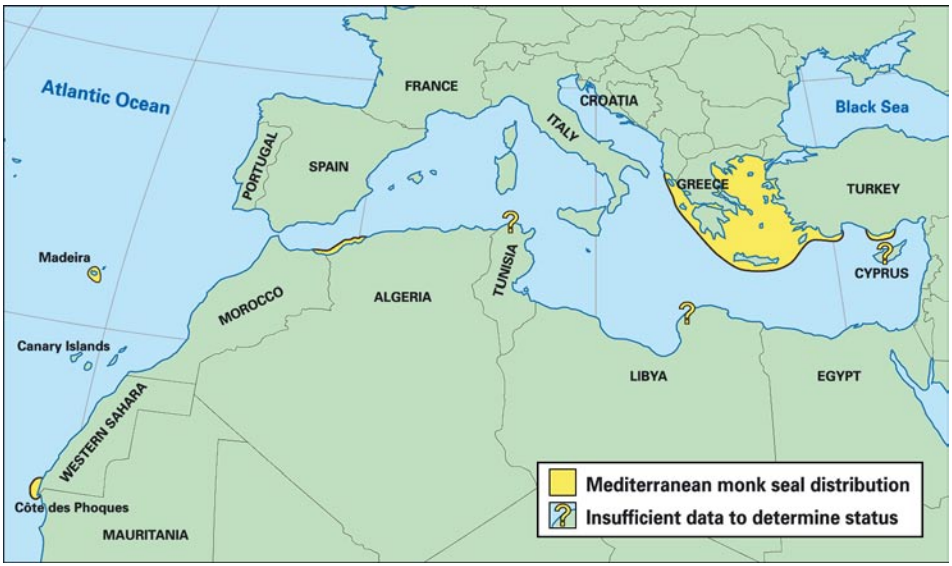

Fig. 3. Current distribution of *Monachus monachus*.

cause of mortality, particularly in the eastern Mediterranean (Israëls, 1992; Anon., 1994; Androukaki et al., 1999; Johnson & Lavigne, 1998; Johnson & Karamanlidis, 2000).

Modern scientific literature also identifies accidental entanglement in fishing gear as a significant mortality factor, and again, incidents of this kind were first alluded to in the ancient world (Johnson & Lavigne, 1999a; Androukaki et al., 1999).

Indirect, though arguably no less serious, threats to monk seals include human harassment and disturbance, deterioration and loss of habitat, and reduced breeding success. While many modern manifestations of those pressures were not yet evident in the ancient world, the Middle Ages and Renaissance – such as mass tourism, intensive coastal urbanisation and industrial development – traditional forces confronting the species proved more than capable of engendering and then perpetuating such impacts (Johnson & Lavigne, 1998, 1999a, 1999b).

Already severely weakened by these historical pressures, in many areas the species proved incapable of withstanding the relentless onslaughts of the 20th century.

Eradicated from most of its former range, the species is now mainly confined to two surviving populations (Fig. 3), one occupying the Atlantic coast of northwest Africa, and the other, the eastern Mediterranean (Anon., 1994; Brasseur et al., 1997; Johnson & Lavigne, 1999a). It is now effectively extinct in the western and central Mediterranean, the Marmara and Black Seas (Kiraç, 2001).

With a mass mortality event striking the seal's largest surviving colony in the western Sahara in 1997, risk of disease was also added to the list of mortality factors affecting the species (Harwood et al., 1998; Jiddou et al., 2000; Osterhaus, 2002).

Today, fewer than 500 individual monk seals are thought to survive, making *Monachus monachus* Europe's most endangered marine mammal (Johnson & Lavigne, 1998, 1999a, 1999b).

In 1984, the World Conservation Union described the species as one of the twelve most endangered animals in the world (IUCN, 1984).

AN INTRODUCTION TO THE AGE UNDER STUDY

When classical civilisation fell into ruin in the 5th century A.D., Europe entered the Age of Ignorance, dragging the natural sciences along behind it. Without the rational cornerstone of Aristotle's zoological works, lost amid the rubble in the fall of Rome, the resurrection of natural history was to assume an entirely different form, shaped and moulded by a mixture of pagan and Christian animal symbolism.

Most influential of all was the *Physiologus* (The Naturalist), a compilation of allegorical tales portraying the universal qualities humans were said to share with the rest of the living world. These vivid fables were steeped in the mysticism and folklore of the eastern Mediterranean, whose pervasive influence had once also coloured the works of Pliny and Aelian (Eden, 1972; Bowler, 1993; Johnson & Lavigne, 1999a).

Though mystery surrounds its origins and authorship, the Physiologus is believed to date back to Alexandria in the 2nd century A.D. With scant evidence to complete a more

detailed picture, scholars have been left to speculate on the circumstances surrounding its appearance in the Levant. Some advance the theory that The Naturalist was discovered, and perhaps even compiled, by an anonymous Christian, who became enthralled by the confluence of animal symbolism he found reflected in pagan literature and biblical scriptures (Eden, 1972; Ley, 1968).

In its pragmatic approach towards enticing people to the faith, the Church had long been accustomed to assimilating pagan rites and festivals into its own rituals. In pursuing the same objective, the Church Fathers were forever seeking ways in which Christian doctrine could be conveyed to their flocks in a familiar and appealing manner. In this respect, because of its simple and uncontrived blending of Judaeo-Christian theology and pagan fables, the Physiologus proved a windfall for the Church's temporal aspirations (Eden, 1972; Ley, 1968).

By the fifth century A.D., the Physiologus had been translated into vernacular languages throughout the far-reaching sphere of influence of the Greek Church. In contrast, the Latin version was condemned as heretical by Pope Gelasius at the Council of Rome in 496 A.D. and was listed in the first index of proscribed works issued by the Roman Church.

In any event, in the centuries that followed, the Physiologus appeared in numerous guises, with countless authors revising, modifying and adding to its text. In turn, these gradually evolved into the bestiaries of the Dark Ages, collections of allegorical animal tales that gradually began to revive zoology as a post-Classical science (Eden, 1972; Bowler, 1993; Kitchell & Resnick, 1999; Ley, 1967, 1968).

Bestiaries also inspired medieval architects, sculptors and painters in their use of animal symbolism, particularly in church art. Symbolic of this trend was the medieval church of San Zeno in Verona, whose portal had to be massive enough to accommodate the great processions streaming in on feast days and other religious festivals. Those who masterminded the design of the gateway obviously believed that decoration, aside from fulfilling aesthetic needs, could also be a means of religious instruction – in effect, creating a pictorial Bible for the poor and illiterate. As such, teams of artisans were commissioned in the 11th and early 12th century to adorn the wings of the portal with 48 bronze reliefs, each depicting a scene from the Old or New Testament. Though they may have been called upon to reflect traditional church imagery, it is in the artisans' attention to detail that their inspiration and originality shines through. Nowhere is this more evident than in the relief that portrays the Great Flood. Here, Noah's Ark takes the form of a seal, its whiskered face and open maw forming the ship's prow. While one of Noah's sons continues to labour at a carpenter's bench, the old man himself is pictured at the gangplank, counselling the creatures that are lining up to take their place on the Seal-Ark (Gazzola, 1956).

In describing the animals of biblical creation and the human-like traits they exemplified, these popular fables continued to provide moral and religious teachings to Christian flocks. Indulging the public's enduring taste for tall tales and curiosities, imaginary animals also made their appearances in these illuminated texts – mythical species such as the unicorn, the phoenix, sirens and mermaids. During the 12th and 13th centuries, the mystical allegory of the bestiary tales gave way to a yearning for more detailed knowledge, though the taste for Christian moralising remained pervasive. Authors relied on numer-

Fig. 4. The seal as Noah's Ark at San Zeno in Verona. Photo: Matthias Schnellmann.

ous sources for their descriptions, including Pliny the Elder, Aelian and Julius Solinus, the third century A.D. Latin scholar who first introduced the name 'Mediterranean Sea' (Eden, 1972; Howatson, 1995; Ley, 1967, 1968).

The European rediscovery of manuscripts from the ancient world inspired further study of the natural sciences.

In the early 11th century, the Benedictine abbey of Monte Cassino (southeast of Rome) acquired for its library medical tracts ascribed to Galen and Hippocrates[1] and also a treatise known as *De quadrupedibus*, dealing chiefly with the medicinal properties of various animals. Exercising his prodigious knowledge of Greek, Latin and Arabic, the monastery's medical scholar Constantine the African (1020-1087), translated some 37 medical treatises from Greek, Roman, Persian and Arabic sources, thereby reacquainting the western world with remedies and therapies based on both rational practice and superstition[2] (Strayer, 1986). Within this cornucopia of plant and animal-based remedies were numerous prescriptions involving the use of Mediterranean seals and their derivatives (Johnson & Lavigne, 1999a).

For zoology, the single most important event during this era was undoubtedly the rediscovery of Aristotle's philosophical and scientific writings. Previously unknown to Western philosophers and theologians, these Latin tracts, based on Arabic translations

[1] Codex Casinensis 97.

[2] Constantine the African, Encyclopaedia Britannica 1996.

and commentaries by such luminaries as Avicenna (980-1037) and Averroës (1126-1198) sprang onto the scene in the 12th century and were soon to cause great upheavals in scholastic circles.[3] By 1278, most of the works in the Aristotelian corpus had been translated from Greek (through contacts with Constantinople), Arabic and Hebrew by scholars such as James of Venice, English bishop Robert Grosseteste, astrologer Michael Scot (Johnson & Lavigne, 1999a) and Gerard of Cremona. The Flemish cleric Guillaume de Moerbeke is credited with being the first to introduce Aristotle's works on animals into Latin between 1255-1278.[4] It was thus that the pioneering naturalists of the Middle Ages and the Renaissance became acquainted with Aristotle's observations on the Mediterranean sea calf (Bowler, 1993; Kitchell & Resnick, 1999; Ley, 1967, 1968).

Aristotelian philosophy gradually became assimilated both into Church doctrine and the natural sciences. A key figure in advancing this process was Saint Albert the Great (*c.* 1193-1280), born in Bavaria to a noble military family. A theologian with a keen interest in natural phenomena, Albertus Magnus was to become the most prominent naturalist of the Middle Ages. Reflecting the high and enduring esteem in which he was held by the Church, Albertus was beatified in 1622 and declared a saint by Pope Pius XI in 1931. A decade later, the Vatican appointed him the patron saint of all who study the natural sciences (Bowler, 1993; Ley, 1968).

Inspired by Aristotle's realism, he refuted many of the superstitions associated with the bestiaries, and wrote his own zoological treatise, *De Animalibus*, largely drawing on the ancient luminary's *Historia Animalium* but also contributing his own insights and observations (Bowler, 1993; Kitchell & Resnick, 1999). Many of Aristotle's comments on the Mediterranean seal were incorporated into *De Animalibus* (Albertus Magnus, 1999). Although he is known to have spent time in Italy, there is no evidence to suggest that he ever ventured as far as the Mediterranean, or sighted one of its seals (Kitchell & Resnick, 1999; Ley, 1968).

Unfortunately for science, the popularity of other ancient works, both Greek and Roman, whose observations on the monk seal and other species were often rooted in superstition, fable and misconception, did much to undermine the objectivity of the Renaissance naturalists.

While the era is commonly thought of as one of growing enlightenment, in which the Neo-Platonist and Judaic mysticism brought to the Church by St. Augustine in the 5th century was being irrevocably swept aside by an Aristotelian-inspired belief system emphasising logic, deductive reasoning and an empirical approach to knowledge, this period actually represented one of the most tumultuous in human history.

During the late Middle Ages and the Renaissance, superstition became a force so virulent that even the Roman epoch's obsession with sorcery and magic tends to pale in comparison (Johnson & Lavigne, 1999a). By 1231, the Papacy had instituted the Inquisition, and two decades later, Pope Innocent IV formally sanctioned the use of torture to extract the truth from suspects. It was an era dominated by systematic persecution over

[3] Averroës, Encyclopaedia Britannica 1996.

[4] Aristotle and Aristotelianism. The later Latin tradition, Encyclopaedia Britannica 1996.

beliefs ordained heretical by the Church, and by a reign of terror which saw several million peasants condemned to die under torture or burn at the stake as witches. Animals, accused of being their 'familiars', were also arrested and executed (Evans, 1988).

While history's view of the Renaissance is that it marked a conscious return to classical ideals, the pursuit of humanism, and a growing rejection of medieval religious authority,[5] it was not until 1700 that the witch-hunting mania subsided, the Age of Reason at last subjecting such malevolent superstitions to greater scepticism.

Renaissance naturalists may have been spurred by exploration and discovery, and yet the unknown, almost by implication, was intimately intertwined with supernatural forces. As such, they were still prone to dark and irrational flights of fancy.

Superstition remained such a pervasive and insidious force that it was evidently difficult to resist – even for those striving, with explicit deliberation, to distance their work from myth and folklore. This was particularly true of regions still remote from the Renaissance awakening, the pastoral and coastal backwaters, both in Europe and beyond, that the naturalists were so dependent upon for their information (Bowler, 1993).

It is perhaps little wonder, then, that even those whom history later bestowed accolades for scientific achievement, recorded the existence of species out of the realms of myth or so disfigured by religious mania, prejudice and fable that they were unrecognisable.

It was under these prevailing conditions that monk seals became transmuted into Sea Devils and bloodthirsty marine wolves.

Despite such compromising flirtations with superstition, the Renaissance naturalists were to leave a lasting impression upon the history of the natural sciences. Foremost among them was Konrad Gesner (1516-1565) of Zurich. Though the name may draw little more than blank stares from most people, the Swiss physician is actually credited with pioneering modern zoology.[6] Gesner was 35 when his *Historiae Animalium* was published in its first volume in 1551. By 1558, as the aspiring encyclopaedist avidly collected animal specimens from both the New World and the Old, it had grown to five immense tomes, thousands of pages long.[7] Today, Historia Animalium, with its extensive use of woodcuts to illustrate species, is considered the foundation of zoology as a science.[5] Gesner played a crucial role in reviving the classical school of zoological description founded by Aristotle and Theophrastus, compiling a systematic inventory of animals and plants. Though the classification system was rudimentary by today's standards, assigning species alphabetically to primary orders, such as Viviparous Quadrupeds, Birds, Serpents, and Fishes, it represented a turning point in the history of zoology (Ley, 1967, 1968).

Gesner, of course, was not alone in rediscovering and advancing the taxonomy established by Aristotle. Among his most prominent contemporaries in Europe were Pierre Belon (1517-1564) and Guillaume Rondelet (1507-1566) of France, and Ulisse Aldrovandi (1522-1605) and Ippolito Salviani (1514-1572) of Italy. Together, their exhaustive efforts in illustrating, cataloguing and describing the animal and plant world paved the way for

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[5] The Concise Columbia Encyclopaedia, Columbia University Press, 1995.

[6] The American Heritage Dictionary of the English Language, Third Edition, 1992.

[7] The People's Chronology by James Trager, Henry Holt and Company, Inc., 1994.

Carolus Linnaeus, the eighteenth century Swedish botanist who devised a binomial system of nomenclature, and is credited with founding the modern scientific classification of fauna and flora.[8]

In drawing systematic comparisons between the skeletons of birds and humans, Pierre Belon (1517-1564) is viewed as a pioneer in the science of comparative anatomy. Unlike Gesner, who rarely strayed far from Europe's cultural and intellectual centres, Belon was more adventurous, becoming one of science's first 'explorer-naturalists'. Under the patronage of Cardinal de Tournon, he undertook long voyages through the eastern Mediterranean in order to identify new animal and plant species. In Rome, he met Rondelet and Salviani, two other eminent disciples of the science of ichthyology founded by Aristotle (Rondelet, 1554; Salviani, 1554). Like Gesner, all three published important illustrated works on fishes, a general classification that also included aquatic mammals. A drawing and brief description of the Mediterranean seal appears (Fig. 5) in Belon's 1555 work *La nature et diversité des poissons*, under the various names of *phoca, vitulus marinus, vecchio marino, veau* and *loup de mer* (Belon, 1555; Buffon, 1765).

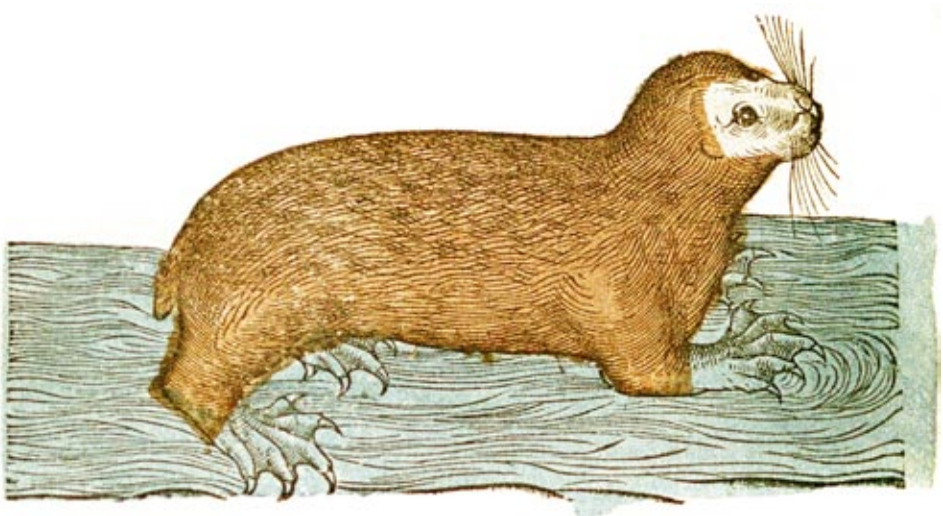

Fig. 5. Pierre Belon's Mediterranean sea calf.

In 1554, Guillaume Rondelet, a professor of anatomy at the University of Montpellier, published his *Libri de Piscibus Marinis*, in which almost 250 marine animal species were described and illustrated.[9] Focusing primarily on the Mediterranean, Rondelet's

[8] The Concise Columbia Encyclopaedia, Columbia University Press, 1995.

[9] Encyclopaedia Britannica.

landmark work featured a woodcut illustration and a brief Latin description of *de Vitulo maris mediterranai*, the Mediterranean Sea Calf (Rondelet, 1554; King, 1956).

Despite relying heavily on the records of the ancients, Guillaume Rondelet is thought to have been the only naturalist of his era[10] to provide a detailed, firsthand description of the Mediterranean monk seal. The description is accompanied by a rather crude woodcut that lends the seal a somewhat grotesque and ferocious appearance (Fig. 13).

Four years later, the species found its way into Gesner's *Historia Animalium* under the same name, and accompanied by the same illustration (Gesner, 1558, 1563).

The species was also described by Ulisse Aldrovandi (1522-1605) who, after narrowly escaping being burnt at the stake on charges of heresy, received the patronage of Pope Gregory XIII in publishing his numerous works on natural history. Though adding little of substance to contemporary knowledge of the species, the Italian physician and pharmacologist saw an allegedly well-kept seal in his native Bologna, an individual apparently captured on the Dalmatian coast (Aldrovandi, 1638; Hermann, 1779; Brusina, 1889).

Reflecting the way in which ancient sources of knowledge were often regarded as having an almost Biblical infallibility, the encyclopaedists quoted Aristotle, Hippocrates, Pliny and other classical authors extensively and often verbatim. At the same time, however, the naturalists also relied on other sources, some contemporary, some several hundred years old, some named and some anonymous. Those familiar with the original source material will sometimes be struck by the peculiar sense of unreality that is created by this mosaic of facts, legends and hearsay.

A typical example is the Belon, Gesner and Aldrovandi description of the Mediterranean seal as a pest that devastates vineyards and orchards. Without qualification, the naturalists reinforce their accounts by paraphrasing (without acknowledgement) Aristotle's description of herds of monk seals occupying headlands over the sea, and the species' distinctive stretching and contracting gait as the animals roll down into the water. Although Aristotle's description, read in context, appears to be a reliable rendering of observations of seal colonies, possibly on the island of Lesbos where he studied and worked with Theophrastus (Johnson & Lavigne, 1999a), the image conjured up by Belon, Gesner and Aldrovandi is of an orchard-marauding seal that will sometimes climb small hills (Aldrovandi, 1638; Belon, 1555; Gesner, 1558).

A related flaw is found in the concept of time, or rather the lack of it. Gesner's encyclopaedic approach to cataloguing knowledge resulted in his dependence upon a wide-ranging network of sources and correspondents, from classical authors and medieval scholars, to contemporary correspondents such as traders or seafarers. For the most part, this mass of material is simply regarded as a collection of static, immutable knowledge, paying little or no heed to the passage of time. It is partly for this reason that descriptions of the Mediterranean sea calf are marked by such acute, puzzling and irreconcilable contradictions.

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[10] With the possible exception of Severinus (1659), who provided a detailed anatomical account of a dead Mediterranean seal.

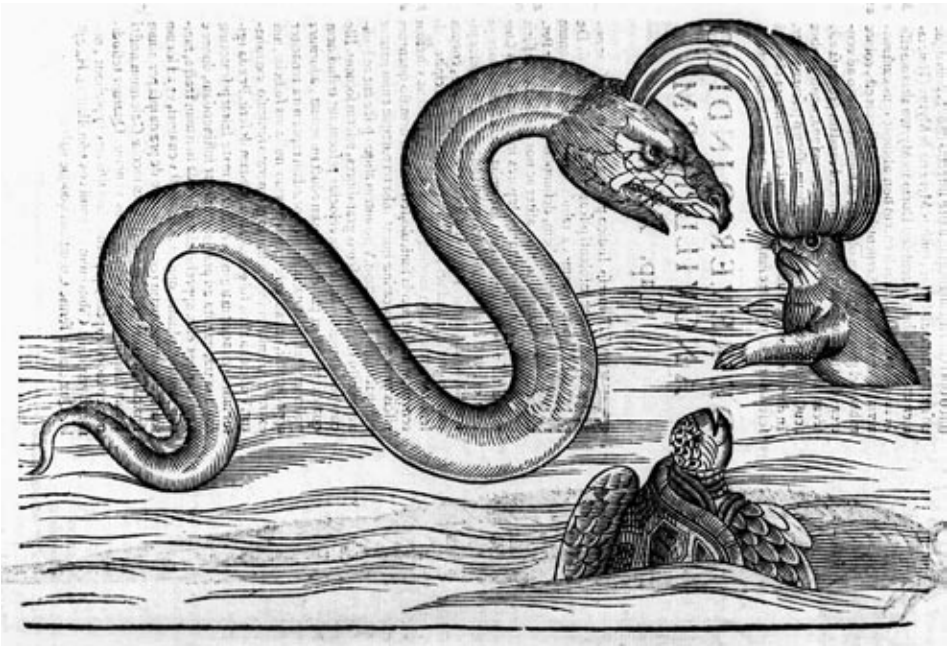

Fig. 6. A sea serpent attacking a seal, from Aldrovandi's *De piscibus,* 1638.

Given their most notorious lapses, particularly in so earnestly describing species conjured up from the realms of magic and fable, posterity has been remarkably kind to the Renaissance naturalists. Their saving grace, however, was that these trailblazing zoologists were generally accurate in describing the species that they were familiar with. Gesner, for instance, who was fated to die of the plague in his native Zurich on an evidently unlucky 13 December 1565, presented detailed and accurate descriptions of the Alpine Ibex and other species of his native Switzerland. Pierre Belon, murdered by unknown assailants in the Bois de Boulogne in 1564, laboured over his bird and embryo observations with painstaking attention to detail. And, based on firsthand knowledge – observations of living seals as well as seals examined during necropsy – Guillaume Rondelet's portrayal of the species appears more convincing than the renditions served up by his rivals (Bowler, 1993; Ley, 1968).[11]

[11] Indeed, the objectivity of firsthand observation was an issue that Rondelet used to berate his rival, Pierre Belon, over the latter's portrayal of the monk seal. He writes: "In truth I have most diligently examined the marine calf and have ascertained that the foreflippers are exactly as we have described [Fig. 13]. Today I preserved a dried calf at home and this can be confirmed by the testimony of their own eyes of anyone who comes to see. That author [Pierre Belon] of the book on aquatic animals represented the marine calf in the most inept way: for he did not depict it as Aristotle rightly said, but attributed to it upper and lower limbs with an elbow, the front and rear feet being divided and interconnected with membranes, not it seems as appropriate to a calf but rather to a beaver [cf. Figs. 5 and 13]."

And yet, firsthand observations aside, it was their eagerness to catalogue any life form – either observed, reported from afar or conjured up in the minds of explorers and mariners – that is at least partly to blame for the hodgepodge of half-truths and fable that contaminated their publications.

To a certain extent, this susceptibility was encouraged by the Renaissance's conformism to classical methods and ideals, which compounded errors and inhibited originality (Bowler, 1993). Indeed, even in recording the existence of such fabulous creatures as unicorns, centaurs, dragons, satyrs, or 300-foot sea serpents, the naturalists were following faithfully in the footsteps of Pliny, Rome's prominent and most avid encyclopaedist. Amassing such knowledge, confirmed or not, was equated with diligence. While rational minds may have seen through the fabrication of monsters and mythical beasts, the descriptions also had a more sinister aspect, distorting the nature and behaviours of genuine species and perpetrating negative stereotypes that justified their persecution. The portrayal and depiction of the monk seal as an evil, malevolent beast is a case in point, and an issue we shall dwell on in greater detail in due course.

The myths unwittingly perpetrated by these pioneering naturalists were compounded by the exaggerations and artistic license of the illustrators commissioned to illuminate such works. Though often highly skilled in their art, many illustrators were actually illiterate, so that some drawings or engravings bore only a passing resemblance to the written descriptions they were intended to represent. This only served to elevate, even further, the naturalists' tall tales (Bowler, 1993; Ley, 1967).

Fig. 7. Belon's Sea Monk, *Monachus marinus.*

There was also another important factor at play. In an age when protocols defending authorship were still no more than a gleam in science's eye, the naturalists of the sixteenth century had few qualms about cribbing and plagiarising each other's work. As a result, popular myths and falsehoods were perpetuated with viral-like efficiency. A case in point is the Sea Monk, *Monachus marinus*, whose possible connection to the Mediterranean monk seal has been a subject of some (unpublished) speculation of late.

Indeed, descriptions furnished by Belon (1555) and Gesner (1558, 1563) provide no compelling evidence that this was the earliest known reference to the Mediterranean seal as *Monachus*.

According to Belon, this peculiar creature lived for only three days, and perhaps rather appropriately for a pioneering comparative anatomist, the woodcut which accompanies his description bears a rather striking, three-fold resemblance to a bird, a fish and Saint Francis of Assisi (Belon, 1555).

Classifying it as an "Exceptional Sea Miracle", Gesner reports that *Monachus marinus* had its home in the Baltic. On three occasions, he writes, Norwegian and Danish herring fishers discovered the monk in their twine nets. One, measuring 4 cubits, was preserved and sent to the Danish king, to be treasured by His Majesty as a sea-miracle. Though both Gesner and Belon report that Sea Monks had also been captured off the coasts of Portugal, there is no record of these extraordinary creatures ever having roamed the Mediterranean, rather effectively quashing hopeful connections between this marine curiosity and the monk seal.

Despite the Renaissance's rebellion against the authority of the Church, the appearance of such ecclesiastical sea miracles was probably inspired by the lingering influence of Christian animal symbolism, so well known to earlier medieval bestiaries. In his encyclopaedia on marine life, Gesner describes an equally bizarre species, the *Episcopus marinus* or Sea Bishop (Gesner, 1558, 1563). This animal (Fig. 8), suitably plump and in full ecclesiastical attire as befitting its rank, was apparently caught on the coast of Poland in 1531 and was presented alive to the king. Expressing itself in sign language, reports Gesner, the strange creature most vehemently indicated its great desire to return to the sea. Accordingly, it was led back to the shore, whereupon it cast itself into the deep, never to be seen again.[12]

Such myths seem curiously quaint today, and yet reports of sea monsters, nymphs and mermaids continued to be reported by naturalists well into the 19th century – long after Johann Hermann, in 1779, brought a more dispassionate eye to bear in his scientific description of the Mediterranean monk seal, which he named *Phoca monachus* (Hermann, 1779). And yet even in Hermann's treatise, in which the German professor can be heard to agonise over puzzling inconsistencies and contradictions in reported facts, there are lapses of judgement, errors rooted in hearsay and superstition.

[12] Although duly recording the creature in his own encyclopaedia, Rondelet is more sceptical of the Sea Bishop's existence, stating: "I knowingly omit several things that have been narrated to me about this monster because I consider them fabulous. For it is a vanity of man that to a thing that is of itself wondrous enough, they add many things that are beyond belief."

Fig. 8. Gesner's Sea Bishop, *Episcopus marinus.*

Therein lies the problem in judging the merits of science in any given era. While it is tempting to ridicule Gesner's Sea Bishop or Sea Devil, it is also worth noting that objectivity – despite all claims to the contrary – has never been an immutable quality, even if every age believes that it possesses its singular clarity of perception.

As the naturalists of the Greek, Roman, medieval and Renaissance periods have so amply demonstrated in the works they have bequeathed to future generations, objectivity has always been subject to the distorting pressures – moral, religious, political or economic – of the societies in which each lived and worked.

Unless science today can be said to be an exception to a rule several thousand years old, then it is difficult to escape the conclusion that similar misconceptions must also haunt the present day and age, as yet to be debunked and ridiculed by future generations.

Indeed, in examining the historical record, it is striking how core attitudes towards the monk seal and its habitat are still coloured by ancient values and misconceptions, even if some forms of exploitation have faded away by necessity, or if superstitions have been swept aside by changing moral or religious beliefs. And yet fundamentally, attitudes have hardly changed at all.

Over the preceding 2000-3000 years, the species has variously been portrayed as a fish-stealing, net-destroying pest, an omen of luck or misfortune, a valuable source of furs, oil and medicines, or – as numbers have dwindled – as a species of no known or realizable economic value with dubious chances of survival.

In other words, even where it became the totem species of an ancient tribe, had its survival prospects debated by modern day nature managers, or had its economic potential and public appeal analysed by conservation fund-raisers, the monk seal – with few notable exceptions – has always been viewed through the distorting lens of human self-interest.

Ironically, monk seal conservation campaigns are often no exception, appealing for public support to save the species and its habitat for "future generations" or as a part of "our common heritage". The idea that the monk seal may, in fact, possess an intrinsic value of its own, irrespective of human self-interest, is rarely encountered. Indeed, even educational material highlighting the possible impact of the seal's decline upon the marine ecosystem is often guilty of relating those consequences exclusively to the species occupying the summit of the ecological pyramid: *Homo sapiens*.

While there may be room for argument on the biological imperatives of anthropocentrism – or even its expediency in achieving conservation goals – there is at least one thing that anthropocentrism cannot pretend to be in an interdependent ecological system: objective.

RESULTS AND DISCUSSION

MONK SEALS IN MYTH AND LEGEND

Popular folklore has transmuted monk seals into mythical creatures – including mermaids, Nereids, sirens and 'men of the sea' – in lands as far afield in time and space as ancient Greece, medieval Madeira and Renaissance Italy (Johnson & Lavigne, 1999a). In numerous cases, the feared, resented and much-maligned species would also appear in more sinister incarnations, including marine satyrs and other demonic sea beasts, capable of ravishing women and attacking fishermen (*e.g.* Gesner, 1558; Aldrovandi, 1642).

These various transmutations, some of which had their roots in the ancient world, not only found their way into the bestiaries and fables of medieval Europe, but also into the Renaissance encyclopaedias of some of the most respected naturalists of the age.

Where seals and sirens are concerned, the smudging of fact and fable is most transparent in the writings of the Roman sophist Aelian, who suggested that the ominous cries of Mediterranean sea-calves from headlands and projecting rocks would lure passing seafarers to their doom (Johnson & Lavigne, 1999a).[13]

Theobaldus' *Physiologus,* a poem in manuscript dating back to the late eleventh century, offers a similar view. "Sirens are monsters of the sea," wrote Theobaldus, "resounding with loud voices and moulding their songs with many measures; sailors very often approach them without caution; and they cause sleep through the overpowering sweetness of their voices and produce sometimes shipwreck and sometimes peril of death" (Eden, 1972).

[13] Aelian, On the Characteristics of Animals, IX. 50.

Researchers in Turkey have noted the high-pitched, siren-like sound that mother seals make in warning their pups of danger (Harun Güçlüsoy *pers. comm.*, 1997). The risk of sleep conveyed in the myth may have been related to seafarers sailing along perilous, rugged coasts where there was greatest risk of shipwreck, and to the mesmerising sound of the seals. Conceivably, it may also be linked to the seal's infamously sleepy habits and the animal's perceived medical benefits in curing insomnia (Johnson & Lavigne, 1999a).

Reports of mermaids, sea nymphs and sirens are also scattered liberally through the great tomes of the Renaissance naturalists – Konrad Gesner, Pierre Belon, Guillaume Rondelet and Ulisse Aldrovandi – often interspersed with clearly recognisable marine species.

Drawing on the works of Greek and Roman writers from the ancient world, these men of science were all well aware of the existence of the Mediterranean seal or 'sea calf'. Their greatest idol, Aristotle, had soberly described the species over 1500 years earlier as a viviparous quadruped (Johnson & Lavigne, 1999a), and they drew extensively upon his observations and often quoted him verbatim. In certain cases, the historical record was even bolstered by direct personal observation. And yet, as indicated earlier, with few opportunities of verifying the reports they received from their network of correspondents – the traders, mariners and explorers who were traditionally more predisposed towards superstitious beliefs – the naturalists quickly fell victim to their own thirst for knowledge. Like the proverbial tall tale, it is likely that real encounters with real species became increasingly inflated and distorted as news spread by word of mouth (Bowler, 1993; Ley, 1967).

It is at this precise point where the Mediterranean seal again assumes a dual identity – pinniped on the one hand, and mermaid or siren on the other. So numerous were the sightings of these fantastic creatures that the Renaissance naturalists, notwithstanding their supposed strivings for objectivity, found them impossible to ignore. Konrad Gesner, for instance, noting these "manifold appearances," concludes that "the curious descriptions of certain sea creatures resembling men above and fish below is not entirely concocted fable" (Gesner, 1558; 1563).

A particularly compelling example of this transmutation from seal into mythical marine beast is found in Gesner's description of the Sea Devil or Merman (Fig. 9), a creature identified only several centuries later as a Mediterranean monk seal (Brusina, 1889). Ironically, in this instance, Gesner even employs a binomial system of classification, the origination of which was later credited to Linnaeus. Classifying this bizarre species under the various names of *Triton marinus, Dæmon marinus, Satyrus marinus* and *Pan marinus*, Gesner reports that one specimen was captured in Norway, and another "caught at Rome in the 23rd year, only this one did not have horns."

"Under Pope Eugene,"[14] he continues, "near the town of Sibenik in the Illyrian Sea,[15] there was caught such a Sea Devil which was said to have dragged a boy into the sea."

[14] Presumably Pope Eugene IV, 1431-1447.

[15] The Adriatic.

Presumably, the range of devilish synonyms was inspired not only by the animal's appearance, its curved horns and cloven foreflippers, but also its voracious and predatory habits, a subject we shall return to in due course (Gesner, 1558; Aldrovandi, 1642).

Aldrovandi's *Monstrorum historia* published in 1642, a tome dedicated to the beasts and monsters that were reputed to populate the earth, seas and oceans, contains similar descriptions of *Triton marinus*.

Like Gesner, Aldrovandi appeared to believe that reports of the Mediterranean Sea Devil were both numerous and reliable enough to confirm its existence. Citing a Venetian source,[16] he recounts the story "of certain Dalmatians, men of good faith, that sometimes a marine man appeared near a town in Dalmatia, now called Split. It used to instil great terror in all spectators" (Aldrovandi, 1642).

In a later passage, he also records an event said to have occurred in 1523, when "a most powerful marine monster was found at Rome on a great shore… of human form as far as the navel and thence like a fish with a split tail spreading in the form of a half-moon…"

Commenting on the Sibenik incident, Aldrovandi writes that the Sea Devil was "captured in the Illyrian Sea when it emerged from the water onto the shore and was about to seize a small boy playing there, but was struck by stones from the watching fishermen; the wounded monster barely having reached the shore fled from thence and expired as it retreated."

To a native poet of Sibenik, however, it appears that the seal was somewhat less sinister, and had not quite crossed the boundaries between merman and sea devil. In his popular poem, *In Praise of the Town of Sibenik* Petar Divnic (1525-1600) writes:

"And an even more amazing creature did they see here:
It was a wild man of the sea that they caught" (Zupanovic, 1966).

In any event, both Gesner and Aldrovandi include depictions of the *Triton marinus,* Gesner's version (Fig. 9) reputedly "received from an artist who had seen the monster alive" (Gesner, 1558; Aldrovandi, 1642).

A rare book, bound in parchment and written by an anonymous author in 1686, reports another sighting of the fearsome Sea Devil along the craggy Dalmatian coast. *Viridarium Adhriaticum* – the Adriatic Pleasure Garden – reveals that "The Marine Triton, the marine demon or merman… has recently been caught in the Adriatic Sea." Reflecting the public's enduring fascination for such tales, the author then relates what appears to be an embellished account of the story previously recorded by Gesner and Aldrovandi. In this 1686 version, the boy is dragged into the sea – presumably to his doom – by the Marine Triton, "a fact which is desirable to communicate for the delight of the curious reader."[17]

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[16] Identified only as 'Gillius'.

[17] *Viridarium Adhriaticum* was published in Augsburg, Austria in 1686, and one of the few surviving copies is held at the Ambrozian Library in Milan (Brusina, 1889).

Fig. 9. The Marine Triton, or Sea Devil, *Triton marinus*, in Gesner, 1558.

This terrible devil, concludes the 19th century Croatian naturalist Spiro Brusina, "is none other than the Dalmatian monk seal." Both Sea Devil and seal, he reasons, also shared a different persona – that of the Merman of the Adriatic, known locally as *morski covjek*. The capture of such a creature in 1624, "about which there was much talk in that dim and distant time," was reported by the Dalmatian geographer Dr. Menis. In his monograph, *Il Mare Adriatico*, published in 1848, Menis identifies the creature as Dalmatia's endemic seal, which he named *Phoca crinita* (Menis, 1848; Brusina, 1889; Zupanovic, 1966).

Intriguingly, Gesner's description of the Dalmatian Merman is almost indistinguishable from his *Pan marinus.* Pan, of course, was more commonly known as a seducer of chaste peasant girls than for dragging young boys to their doom, but Gesner's *Homo marinus* or Man-fish did in fact display such amorous behaviour.

In the land of Dalmatia, he writes, near the town called *Spalat* – the modern-day city of Split – a Merman was seen emerging from the sea out of a desire to capture a woman who was walking along the shore at night. Those who witnessed the incident were seized by great fear, but when the woman caught sight of the sea-miracle, and fled, the Merman threw himself into the sea again and vanished without trace (Gesner, 1558, 1563). An entirely innocent interpretation of the tale might be suggested simply by reading between the lines. On a dark shore, a chance encounter takes place between a village woman and a monk seal keen to nap on the sands. Both are panic-stricken by the suddenness of their encounter, the woman dashing away from the shadowy figure that seems intent upon ravishing her, and the seal diving back into the sea. Gesner adds that the creature "looked almost human," and yet descriptions of the human-like face of the monk seal have appeared in folklore throughout the ages (Johnson & Lavigne, 1999a).

Fig. 10. The Nile delta mermen, from Jonstonus, 1650.

Further hints that the early naturalists' mermaids and mermen were, in fact, seals or dugongs are unwittingly provided by Gesner (and echoed by Aldrovandi) in a later passage (Gesner 1558, 1563; Aldrovandi, 1642). "Also at the Red Sea," writes Gesner, "there are caught, often and many, such Mermen, from whose hides one prepares such strong shoes that a pair lasts 15 years." According to fishers' legends, he adds, when the sea is stormy "a lamentable sighing of such fishes can be heard from the deep."

Other men of the sea were reported from the Nile (Fig. 10), whose nutrient-rich delta, teeming with fish, was once almost certainly an important feeding ground for monk seals (Flower, 1932). "When beseeched in the name of God," writes Gesner, these human-like creatures "allowed themselves to be seen until the ninth hour of the morning. The man had a broad chest, red hair mixed with grey, the woman, beautiful breasts, long hair, and both were completely naked." Well into his stride, and perhaps stretching even Renaissance credulity to the limit, Gesner adds that on occasion, such sea miracles even "lived amongst other women and performed womanly chores" (Gesner, 1563; Jonstonus, 1650).

Almost indistinguishable from the mermaids were the Nereids or sea nymphs. For Gesner, there was ample justification for classifying these species in *Historiae Animalium*. Daily experience by fishers and mariners, he insists, confirms the existence of such incredible creatures in the briny depths of the sea.

In their physical appearance, he tells us, their upper torsos compare to a woman, but their lower regions to a fish. Quoting the 15th century Byzantine scholar Theodorus Gaza of Thessaloniki, he reports that a sea nymph was sighted in the Peloponnese, thrown up on shore by the violence of a stormy sea. The creature was still living and breathing, and while its face possessed a human-like beauty, its body was rough with scales, ending in a crayfish-like tail. When a large throng of people surrounded the sea-miracle, it uttered a heavy sigh, entirely consumed by grief, and finally, a mighty howling. Out of pity, the crowd of onlookers cleared a path towards the sea, and the nymph, with the help of its

arms and tail, crawled to the best of its ability towards the water's edge. Throwing itself into the waves, the creature swam away with great vehemence and was never seen again. Suggesting a kernel of truth in the legend are similar stories from later centuries – though generally without the fairy tale ending. Villagers surround a young stranded seal, taking delight in its unexpected appearance; women and children play with the creature, a game that begins with affection, runs on to teasing, and ends in deliberate cruelty. Finally tiring of the novelty, and at a loss of what to do with the foundling, they finally club it to death (*e.g.* Johnson, 1988; Parks & Frost, 1958). Norris (1972) describes a similar encounter at Tobruk, Libya, in the early 1960s, writing that: "The first of these 'strange fishes' came out of the sea to a small beach where it was observed to have 'whiskers like a man' and heard to 'cry like a woman' when poked with a stick. Its eventual fate is not known, but it seems unlikely that it would survive the chastisement to which it was obviously subjected. The second specimen also attracted its crowd of curious onlookers. Fearing that it might be dangerous, it was destroyed by a home-made bomb."

Another briny miracle was the Sea Lion, the *Monstrum leoninum*, evidently unrelated to the Sea Lion we are so familiar with because Gesner's specimens were apparently discovered in the Mediterranean (Gesner, 1558, 1563; Rondelet, 1554; Ambrosinus, 1642). Describing the species as a fish "which compares to a lion," the Swiss naturalist notes that one was captured during the reign of Pope Paul III (1534-1550) near the town of Centuncellis and another in 1284, which "cried and wept like a human, and was brought to Pope Martin IV as a miracle."

Fig. 11. The 1523 Sea Miracle from Rome, in Gesner 1563.

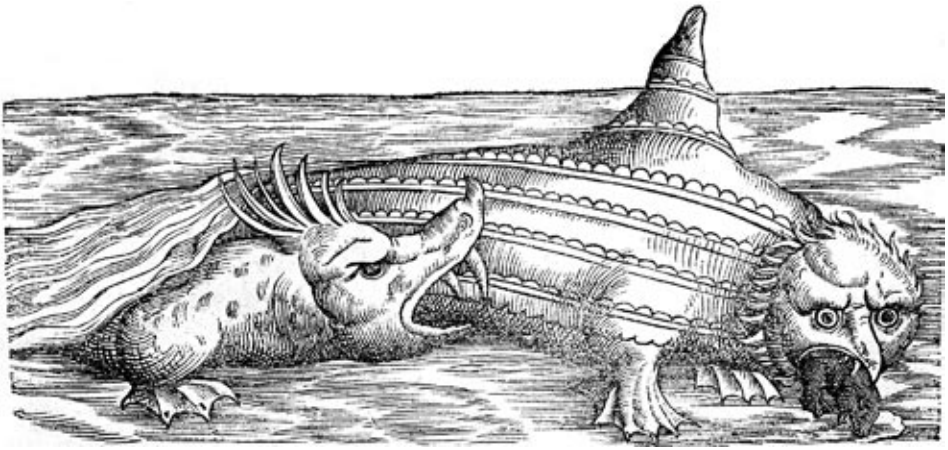

Fig. 12. "The Ziphius [right], a horrific marine monster here swallows a black seal. The other monster, called the terrible Ziphio lies in wait by its side." Gesner, 1560.

The discovery of such Sea Miracles were immensely popular with the public, and handbills were distributed far and wide to proclaim the news. Quoting from a handbill printed in Germany, Gesner informs his avid readers that in the winter of 1523, a Sea Miracle which had the form and size of a five year old child was seen in Rome (Fig. 11). The accompanying engraving, notwithstanding the infamously liberal artistic license of the Renaissance illustrators, bears a rather striking resemblance to the Marine Triton or Sea Devil.

Another seal-to-mermaid transformation is documented from Madeira. When Portuguese navigator and Madeiran colonist Álvaro de Ornelas brought "sea-wolves" back to the Kingdom as curiosities during the 17th century, they became known as "women of the sea," in part because of the admiration they elicited in nursing their young. Today, the family's coat of arms can still be seen in the Madeiran capital of Funchal, adorning the stone facade of the Palácio dos Ornelas on the Rua do Bispo. Here, Álvaro's sea-wolves are represented by two mermaids (Sarmento, 1948; Henrique Costa Neves *pers. comm.*, 1996; Neves & Pires, 2000).

In his supplement to the volumes of Aldrovandi, Bartholomeus Ambrosinus, professor of medicine at the University of Bologna, notes that a seal recently displayed for profit in a circus was "called Old Man of the Sea, since by its appearance it especially resembled the face of an old man" (Ambrosinus, 1642).

The connection between seals, mermaids and sirens was also seized upon by the 18th century Welsh naturalist Thomas Pennant (1726-1798), who, writing of the Caspian seal, observed that the animals "Swim with vast strength and swiftness; frolic greatly in their element, and will sport without fear about ships and boats; which may have given rise to the fable of Sea-nymphs and Sirens" (Pennant, 1793). Indeed, such myths were to prove surprisingly enduring. Long after Linnaeus, naturalists were still including sea monsters,

nymphs and sirens in their zoological compendiums, as amply demonstrated by Sir William Jardine's *The Naturalist's Library*, published in 1839 (Jardine, 1839).

Other creatures, that today appear to have been conjured up out of the realms of myth, may also have had some basis in fact – including potential predators of the monk seal.

Quoting the Catholic priest and cartographer Olaus Magnus (1490-1557), Gesner and Rondelet both assert that the Mediterranean sea-calf had enemies other than fishermen. "It is said that they fear the great whale-fish called Ziphius," writes Gesner, "a horrible whale-fish or sea-miracle... by which it is swallowed."

Another "mighty whale-fish", the sea-ram, a creature that "is the most horrible that can be seen," he declares, also hunted the seal: "The ram of the ancients is a huge monster that similarly feeds on the black seal" (Gesner, 1558, 1560; Rondelet, 1554).

The Roman sophist Aelian (A.D. 170-235), notes Gesner, spoke of seals being lured from their caves by the sea ram and then quickly devoured.

While it is impossible to identify these species from the bizarre woodcuts that accompany Gesner's text (Fig. 12), they might conceivably be killer whales or great white sharks.

Researchers believe that these infamously efficient predators were once more common in the Mediterranean than they are today, but that numbers dwindled with the shark's food supply – principally marine mammals such as dolphins and seals (Elis & McCosker, 1991).

HUMAN ATTITUDES

To Gesner and his contemporaries, the existence of the Mediterranean sea-calf was undisputed fact, regardless of the myths and fables that so often smudged the identity of the species. And yet, inevitably, the same superstitions and village tales that blurred the distinction between real species and imaginary sea miracles also contaminated their scientific descriptions of the Mediterranean seal and its behaviour. It is in these reports that we gain a rare and irreplaceable record of human attitudes towards the monk seal in late antiquity, the Middle Ages and Renaissance.

Following a trend established relatively early in antiquity, human attitudes towards the Mediterranean seal appear to have been essentially negative, reflecting the nature of a utilitarian society steeped in fear, ignorance and superstition (Johnson & Lavigne, 1999a).

The tall-tale phenomenon, which so contaminated Renaissance natural history, is particularly evident in Gesner's portrayal of the sea-calves as ravenous, man-eating beasts whose prey included the persecuted Mediterranean fisherman.

This description of the species is unlikely to have been a conscious effort on the part of Gesner to demonise the seal. The original reports almost certainly originated in fishermen's mouths, their hostility towards the species and descriptions of its behaviour growing exponentially as they travelled along a daisy chain of rumour and gossip until finally they reached Gesner's ears in Zurich or Aldrovandi's in Bologna. Possibly, the

transmutation of the Adriatic seal into the Sea Devil was yet another example of this same phenomenon.

In discussing these predatory hunting habits of the sea-calf, Gesner paints a lurid and daunting picture, quite worthy of the most hostile commentaries penned by the ancients (Johnson & Lavigne, 1999a). The creature, he writes, "has a wide maw, with sharp, pointed teeth comparable to a wolf's. It has the tendency to bite and snap, and hunts in packs." It is also, he adds, a most voracious animal. Eating in water and on land, it consumes "fish, meat, herbs and anything it can get hold of. Nor does it spare humans either, for which reason it is said to pursue fishers too." As if to reassure those most at risk, and to advise them on methods of escape, Gesner adds: "It will not go far onto the shore, however, but returns to the sea without delay" (Gesner, 1558, 1563).

Gesner also finds further confirmation for these hostile views in the writings of Ravisius Textor (1480-1524), professor of rhetoric in the college of Navarre at Paris: "The animal is very quick to give birth and straightaway afterwards speedily escapes, showing its white belly and gnashing its teeth… It feeds on fish and human corpses, when it sets traps for fishermen" (Gesner, 1558)

Despite his firsthand knowledge of the species, Rondelet offers a similar view of the seal's perceived greed: "The seals fight among themselves[18] and with other fish: for they are carnivores and exceptionally voracious" (Rondelet, 1554).

According to Gesner's anonymous sources and correspondents, the sea calf was not only responsible for persecuting fishermen, but also farmers. "It is an amphibian and for the great part roams along the beaches and like a terrestrial animal is in the habit of feeding on and devastating fields close to the shore. Indeed it strips vineyards, orchards and places planted with trees of their fruit" (Gesner, 1558; Aldrovandi, 1638).

While exaggeration certainly amplifies the apparent implausibility of such accounts, monk seal history is, in fact, littered with reports of monk seals raiding vineyards and farmer's fields, feasting on succulent summer grapes and even potatoes, tomatoes and other crops cultivated near beaches (Güçlüsoy, Johnson & Karamanlidis, 2002).

Accounts have originated from as far afield as Algeria, Corsica, Croatia, France and Turkey and, while no trace of such behaviour can be found in classical texts, its appearance spans at least 500 years, with Belon and Gesner publishing the first known reports in the 16th century (Anon., 1975; Boutiba & Abdelghani, 1997; Brusina, 1889; Gesner, 1558; Hainard, 1962; Jacob, 1979; Ronald & Healey, 1976).

The behaviour was also recorded, albeit with a dose of scepticism, in the first modern scientific description of the species authored by Johann Hermann (Hermann, 1779).

Brusina (1889) notes that "the inhabitants of the Dalmatian coast definitely assert that the seals come ashore during the night to suck the ripe grapes from the vines." He quotes the Dalmatian naturalist Nutrizio Grisogono (1780), as observing that "Within the domains of the state of Ragusa[19] their appearances are sometimes not without considerable

[18] Possibly a reflection of Aristotle, *Historia Animalium* 608b, 18-26.

[19] Dubrovnik.

damage to the vineyards and grapes" (Brusina, 1889). The behaviour is also cited in the 1853 edition of the French Encyclopaedia of Natural History (Chenu, 1853).

Writing in 1857, the German naturalist F. Petter,[20] reports the same phenomenon, though with an added dose of scepticism: "In Split I have seen nothing of the seals or sea calves, but in Ragusa during my stays there, every year one or two were caught. Whether it is true that in the Ombla valley during the ripening of the grapes they go ashore to satisfy their passion for grapes in the new vineyards – that I leave aside" (Brusina, 1889).

Brusina, however, leaves the issue with an air of mystery, reporting that: "Further, it is worth knowing that according to the sayings of the local inhabitants, many years ago a seal was caught in Zupa.[21] It was indeed in a vineyard, presumably not far from the sea" (Brusina, 1889).

In yet another description, this one originating from the Cassis region of France around 1930, naturalist Gilles Cheylan reports that he originally attributed the repeated plundering of a seaside vineyard to wild boars. Hoping to catch the culprits, he and his companions set out for the vineyard at night, but instead of boars, found "four rather small seals diving into the sea which was about 20 meters away." Cheylan concludes that because of the steep slope, the seals "must have used the goat path which leads from the beach to the vineyard" (Jacob, 1979).

To what extent such puzzling behaviour can be attributed to human prejudice towards the species, the academic repetition of errors, misinterpretation of observed facts, or even the genuine expressions of mischievous juvenile seals, is open to question, but beyond the scope of this monograph (Güçlüsoy, Johnson & Karamanlidis, 2002).[22] The relative frequency of such reports, however, and the details they provide, suggest that monk seals were viewed as pests in certain agricultural areas, and that irate farmers would take their revenge on the marauding animals, sometimes with guns (Anon., 1975).

Here then, was a predatory and voracious species, both in water and on land and yet, by virtue of their encyclopaedic approach to knowledge, the Renaissance naturalists also recorded other views of the seal's character and behaviour, apparently oblivious to the stark contradictions that ensued.

Nowhere is this ambivalence more evident than in the naturalists' efforts to draw descriptive comparisons between the aquatic seal and the species that were assumed to be its terrestrial counterparts.

On the one hand, both Rondelet and Gesner go so far as to compare the monk seal to the wolf, traditionally one of the most feared and maligned of all species. On the other, conflicting accounts, often from antiquity – not least of all the Latin name for the species, *vitulus marinus* – also compelled them to report its likeness to the terrestrial calf and its corresponding bovine docility (Gesner, 1558, 1560).

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[20] *Dalmatien in seinen verschiedenen Beziehungen dargestellt,* First Edition, Gotha, 1857, p. 83.

[21] An area south of Dubrovnik, encompassing the towns of Kupari, Mlini and Cavtat.

[22] Boudouresque & Lefevre (1991) attributed the seal's grape and other vegetarian feeding habits to overfishing and consequent malnutrition – an unlikely hypothesis given the fact that the first reports are at least 500 years old. Other authors have speculated that seals may have been crawling into shoreline vineyards, not to feed on grapes, but to escape the fierce summer sun (Güçlüsoy, Johnson & Karamanlidis, 2002).

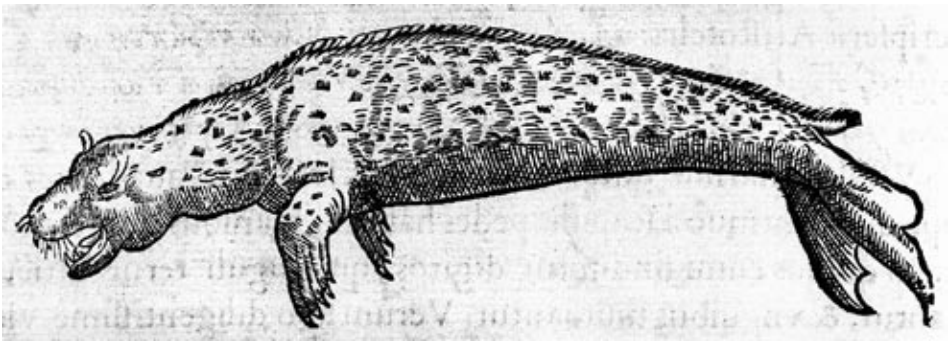

Fig. 13. Rondelet's Mediterranean seal from the island of Lerinus.

Rondelet, for example, writes that: "The aperture of the mouth is of medium size; in it the teeth are iron-like, sharp, hard and white like a wolf's. The lower jaw resembles that of a wolf; the upper jaw is wider than that of a wolf such that with regard to the nose, it is like terrestrial calves" (Rondelet, 1554).

Gesner echoes that view, also claiming that "the Spanish call it a marine wolf" precisely because it "is greedy and voracious in the manner of a terrestrial wolf" (Gesner, 1558, 1560; see also John Jonstonus, 1650). Despite this distinctly unflattering portrayal, in other passages both naturalists admit that the species can show docility and become a "friend to man". In general, it is Rondelet rather than Gesner who is more lenient towards the seal, and the discrepancy in attitude can almost certainly be attributed to the former's firsthand encounters with the species.

Gesner finds further justification for his jaundiced description of the species in the oracular texts of the ancients. While it was true that Ovid called the seals "mighty", concedes Gesner, they were "firstly a deformed metamorphosis". To some, he continues, "the head is ugly, [but] I rather consider them deformed on account of the thick and inarticulate body. They also have a foul and disgusting smell" (Johnson & Lavigne, 1999a).

While echoing many of the negative sentiments of the ancients, Gesner also quotes Io Tzetzes, the 12th century Byzantine didactic poet from Constantinople, who evidently found kinder words to say about the much-maligned Mediterranean seal. According to Tzetzes, both the dolphin and seal "help and encourage their parents afflicted by age to swim."

Yet Gesner, while allowing such behaviour in a species as socially advanced and altruistic as the dolphin, finds it scarcely credible in the seal, "a particularly aggressive animal that is in the habit of treating pups, older beasts and females with violence" (Gesner, 1558).

Other habits of the seal were also deemed worthy of condemnation, such as the species' infamous somnolence, which Gesner, possibly unduly influenced by Zurich's Protestant work ethic, interprets as a metaphor for laziness. The seal "often indulges in sleep during the day," he writes. "In Oppian day-sleeping is nothing less than a metaphor. Thieves

who are in the habit of waking during the night and sleeping by day are subtly indicated by this epithet with rebuke" (Gesner, 1558).

As was the case in antiquity, exceptions can be found to such essentially negative viewpoints, even if they are few and far between.

And yet even these contrasts to the prevailing hostility towards the species may warrant some qualification.

While at first sight such descriptions appear to have been stripped of the mythological vestments that used to cling to them, even a cursory examination reveals how routinely anthropomorphic and anthropocentric they are, with little true connection to the species at all.

That, however, may not be altogether surprising when one considers that the vast majority of observations by naturalists during the period under study took place in captivity.

Cause for praise is found in the species' readiness to be tamed, its ability to entertain the public, its passion for music, and even the bonds of familial love and loyalty that the individual seal is reputed to feel for its offspring, parents and siblings.

Echoing Pliny's view many centuries earlier, Rondelet writes that "marine calves can be tamed and can recognise man; they are in the manner of dolphins, friendly to man" (Rondelet, 1554; Aldrovandi, 1638).

As if to prove the point, Rondelet draws the attention of his readers to the woodcut accompanying his description (Fig. 13), noting that the animal depicted "was captured near the island of Lerinus[23] and which, reared for many days in the strangeness of that island, consorted with men without any fear, dragging itself along the ground and ascending steps."

Encountering a captive specimen in the city of Pesaro in 1599, Italian Benedictine monk, Mauro Orbini, became convinced of the seal's intelligence and docility. He wrote:

> "It happened that in 1599 one of these 'bears', which some call *Vitello marino,*[24] was taken near Gaeta and preserved alive for several months in straw and conveyed in a box around many places in Italy. Those that had care of it, wishing to show it off to others, would take it out of the box where it spent the night locked up, and put it in a great tank full of water. They would coax it out of there calling it by the name *Martino* and it would crawl across the ground wriggling, and depending on what they ordered it to do, so would it twist around, now on its back, now on its belly, on one or the other side. And when they asked for its hand, it proffered its forefoot which had the appearance of that of a goose. And when they asked if it was hungry it immediately opened its mouth and clicked its teeth appearing to say 'yes', fixing its eyes on its patron. When the patron pretended sometimes to be about to hit it with the stick he held in his hand, the sea bear would utter an

[23] Ile St. Honorat, Iles de Lérins, near Cannes.

[24] Sea calf.

unrestrained roar which seemed appropriate for a person enraged, making the pretence of wishing to bite him. And when they told it to return from whence it came, it would make its way back to the tank and, rising up like a snake, would of its own accord plunge into the water. In effect it was a great marvel to see how a fish of this sort could understand that which was said to it and show such discipline" (Brusina, 1889).

Notwithstanding his earlier, blistering accounts, even Gesner records a more compassionate – if anthropomorphic – view of the seals, noting that "the animal, when it is young, is said to display a great love towards its parents, helping to carry and provide" (Gesner, 1558).

Such sentiments, originally expressed in the ancient world,[25] continued to survive in the Mediterranean well into the 20th century, particularly in cultures where traditional values of the family and home assume unrivalled importance.

In Turkey, writes Berkes et al. (1979), "Local folklore is rich with material suggesting that fishermen attribute human-like qualities to *Monachus*. Many stories deal with denning habits of the seal, its bearing of young on land, its vigorous protection of the pups, and its home-keeping."

In contrast to Gesner's negative view of the seal's perceived laziness, a rather more benign, if mystical, interpretation is offered by Pierius Valerianus (1477-1558). In his work *Hieroglyphica*, the Italian author depicts the somnolent seal as a diver and a guardian against great misfortune. "For in the sleep and drawn-out lethargy of the seal, the many records of memory of the deep are now and again refound."[26] Evidently for this reason, adds Gesner, "the seals stretch themselves in sleep on various shores" (Gesner, 1558).

Another mystical and poetically-worded superstition was invoked by the 16th century Italian physician and mathematician Hieronymus Cardanus (1501-1576) who concluded "that amber is born from the froth of seals" as the ocean beats against the shore, "folding as a joyful sight a few animals in its clinging embrace" (Gesner, 1558).

Another departure from the prevailing trend was evident two centuries later as the German naturalist Johann Hermann (1738-1800) composed his observations and drawings of a single male monk seal captured in the Adriatic and held in a travelling show in Strasbourg. The human hostility that was driving eradication of the species may already have been in full swing in the Adriatic by the late 17th century, and yet some, like Johann Hermann, saw not a pest or a devil or even a circus animal that could mimic the human voice, but a rare animal of extraordinary beauty and intelligence. His may have been a voice in the wilderness, but the fastidious professor even saw fit to berate the show's spectators for their insulting and ignorant comments towards the Mediterranean seal (Hermann, 1779).

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[25] Cf. Oppian of Cilicia (2nd century A.D.), *Halieutica,* I. 646; 685-702.

[26] Hieroglyphica, 29.

Fig. 14. The Mediterranean monk seal, *Monachus monachus*, a species that, despite all indications to the contrary, also exists outside anthropocentric myths and superstitions. Photo: Matthias Schnellmann.

For the most part, the anthropocentric view of creation, rooted in traditions far older than the bestiary tales, continued to colour favourable human attitudes towards the monk seal.

A case in point is an event that took place along the Adriatic coast in 1910, in which a spectator, identified only as M. Katunaric, expresses his wonderment at witnessing an "experiment" in which a captive monk seal is introduced to music:

> "The pleasant animal quite enjoyed listening to the music of the bells and singing, but the real show started when playing on the harmonica was introduced in the experiment. Mr. Predic played softly and quietly different melodies. The monk seal raised its head from the water and started listening with curiosity and attentiveness. Afterwards, it lowered its head and closed its large and beautiful eyes occasionally, and almost fell asleep. This was repeated several times and all people present were impressed by this and convinced that the monk seal has an affinity for music. The entire experiment lasted 15 minutes. Mr. Predic had the appearance of an animal tamer. This experience was touching and magnificent and I will remember it for the rest of my life" (Zupanovic, 1966).

Folklore may have been responsible for perpetuating negative sentiments towards the monk seal, but in certain areas it encouraged a far more tolerant – if equally superstitious –

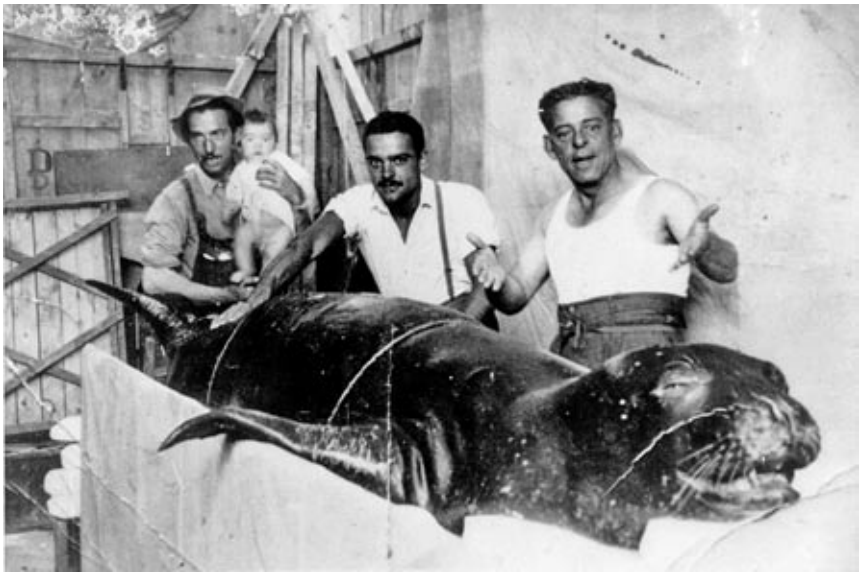

Fig. 15. Fishermen with a dead seal from Menorca in the Spanish Balearic islands, circa 1945. Photo courtesy F. Avella.

view of the species. This kinder, more benevolent attitude was particularly evident in countries of the Islamic faith.

Coastal fishermen in Morocco, Algeria, Libya and Aegean Turkey, for example, shared the belief that a curse would befall anyone foolish enough to harm a seal (Avella, 1987; Boudouresque & Lefevre, 1988; Jacob, 1979; Lefevre et al., 1989). In Turkey, such traditions inspired several of the popular tales recounted by Turkish author Cevat Sakir (1890-1973), popularly known as Halikarnas the Fisherman, since much of his writing career was spent among the fishermen of Halicarnassus, or modern day Bodrum (Sakir, 1991, 1995).

In popular folklore, the seal curse has numerous variations, some of which can still be found in isolated coastal communities even today. A fisherman who dares kill or injure a seal might suffer poor catches for a prolonged spell, his boat might be wrecked in a storm, his wife or child might sicken and die, or the angry sea might even take his own life (Sakir, 1991, 1995; Mursaloglu, 1964; Berkes, 1978; Berkes et al., 1979).

Based on surveys along the Güllük-Antalya coast of Turkey in the 1970s, Fikret Berkes postulated that Sakir had been inspired in his story-telling by the prevalence of such beliefs among local fishermen (Berkes, 1978; Berkes et al., 1979).

Berkes writes: “This is not merely a superstition, according to fishermen, but a generalisation backed up by incidental evidence over many generations. Much of this is embedded in local folklore. In Gökova, for example, fishermen tell the story of Deli Ibrahim who went mad some years after killing a seal. No one would say that Ibrahim went mad

because he killed a seal, but no one would be willing to discount a causal relationship between Ibrahim's killing the seal and his going mad. Another fisherman, Mustafa, once removed a seal pup from a cave despite a warning from an older fisherman to 'put it back or be prepared to suffer ill fate'. He did not, and his boat promptly ran into a storm from which he barely escaped."

Taboos against the killing of seals, Berkes found, were strongest in some reaches of the Sea of Marmara, where some fishermen believed that "if a person even just throws a stone at a seal, that seal will later selectively seek out and destroy that fisherman's net" (Berkes et al., 1979).

In what may be a modern descendent of ancient mermaid myths, Turkish Aegean and Moroccan fishermen also considered the seal a fellow human being, who long ago returned to the sea, and assumed a fish-like form (Ronald, 1982; Avella & González, 1984). Such perceived kinship strengthened injunctions against killing or harming the animals. Even if they were gradually being eroded by fierce commercial pressures and cultural degradation, such attitudes were seen as indispensable to conservation efforts in the Turkish Aegean in the 1970s and 80s (*e.g.* Berkes, 1978; Berkes et al., 1979).

Indeed, such beliefs may even persist in coastal backwaters, where societies remain steeped in traditional values and fishing has not undergone expensive, highly-mechanized transformation (Berkes, 1978; Berkes et al., 1979; Harun Güçlüsoy and Cem Kiraç *pers. comm.,* 2000).

To some fishermen, catching sight of a monk seal is even considered an omen of good fortune, and a sign that the day's fishing would be profitable (Sakir, 1991, 1995).

In Mauritania, artisanal fishermen are so convinced of the animal's ability to bring luck to their catch that, if a seal is found dead, they will affix its whiskers to the prow of their boats (Manel Gazo *pers. comm.*, 1998).

In the Sea of Marmara, some Turkish fishermen looked upon the seal as a beneficial species that chased away sharks. "According to a story narrated in Karabiga," writes Berkes (1978) "in ancient days sharks used to be very common and the fishermen asked the Sultan to get rid of the sharks. The Sultan sent seals and ordered the seals to fight the sharks. The story is backed up by the observation that seals kill and eat dogfish, a small shark."

Further establishing the kinship between human and seal in Turkish folklore were stories, writes Berkes, portraying the animals as "showing devotion and gratitude, very valuable human attributes in the social code of rural Turkey."

One story originating from Fethiye, he reports, tells of a fisherman finding a starving seal pup, "which he fed and nursed back to health before releasing him. For many years the seal followed the man's boat and accompanied him on fishing trips."

Another tale from Bodrum, also heard in various permutations in other parts of coastal Turkey, concerns a group of fishermen watching a ferocious battle between a seal and an unusually large octopus. "The seal," relates Berkes, "was unable to subdue the octopus and came very close to suffocation when the octopus blocked his nostrils. The seal swam over to the fishermen and 'asked for help'. The fishermen removed the octopus to save the seal's life and the seal followed the boat all the way to Bodrum harbour 'to show his gratitude'" (Berkes, 1978).

Following surveys along the Mediterranean coast of Morocco, Avella & González (1984) reported a belief among fishermen that persecuted seals – even those that had been accidentally entangled and subsequently released – would later take revenge by shadowing their boats and deliberately chasing fish away from the nets.

When showed a photograph of a dead seal from the Spanish Balearic islands, surrounded by smiling locals, many of the Moroccan fishermen evinced surprise and even disappointment, added Avella & González.

DISTRIBUTION AND ABUNDANCE

While the Mediterranean monk seal continued to be a species of wide-ranging distribution throughout the period under study, evidence suggests that hunting pressures, persecution, and deterioration of habitat took a significant toll upon population abundance in certain key areas.

Indeed, the picture that emerges from the available literature is one of chronic decline across the entire range of the species, with abrupt population troughs where surviving herds – particularly those occupying open beaches – became the targets of hunters. That picture is also generally consistent with confirmed population trends in the twentieth century, in which the overall pattern of decline eventually leads to local and regional extinctions and increasing contraction and fragmentation (Brasseur et al., 1997; Johnson & Lavigne, 1999a).

In the Atlantic, historical accounts clearly document the existence of large herds of monk seals in the 15th century. Without any historical evidence to the contrary, it must be assumed that these herds had previously escaped the intensive exploitation that had been so apparent in the Mediterranean during the Roman era (Johnson & Lavigne, 1999a). The discovery of these herds by explorers and traders in the 15th century, however, appears to have resulted in their swift demise. In 1437, hunters counted 5,000 seals on the sands of the Rio de Oro, along the Atlantic coast of NW Africa (Zurara, 1437). Judging from accounts of their exploitation, economically significant herds were also found by the conquerors of the Canary Islands in 1402, and Madeira in 1419 (Bontier & Le Verrier, 1404; Frutuoso, 1873; Sarmento, 1948). Records dating back to the sixteenth century also speak of settlers hunting beach-loafing seals on the isolated Azores (Frutuoso, 1873).

Hunting also continued in the Mediterranean. Gesner, Rondelet and Aldrovandi speak of Mediterranean sea calves being hunted for fur, oil, medicines, and also being bludgeoned as fish-stealing, net-destroying pests. There are, however, indications that such exploitation was less intensive than that witnessed during the Roman epoch, another possible indication of reduced population numbers (Johnson & Lavigne, 1999a).

Conversely, the sheer volume of such references in the historical record may be taken as a reliable indication that seal numbers in the Mediterranean were significantly higher than they are today.

Fig. 16. Fishermen in Komiza, in the Vis archipelago, Dalmatia, pose before a slaughtered seal in 1931. Photo courtesy Jasna Antolovic, Grupa Sredozemna Medvjedica.

Indeed, it is possible that seal colonies in certain areas may even have partially revived during the Dark Ages, taking advantage of the break-down in well-organised Roman commerce.

In commenting on a disputed passage in Pliny, in which Augustus of Arabia records the catching of sea calves "three at a time", Rondelet inadvertently sheds some light on seal abundance in the Mediterranean in the 16th century: "In truth in no sea are marine calves so few but rather they take them in far greater quantities then three" (Rondelet, 1554).

Elsewhere, commenting on Aristotle's observations of seal herd behaviour, he appears to equate observations of Mediterranean with North Sea seals: "The seals fight among themselves and with other fish, for they are carnivores and exceptionally voracious.[27] We have several times noted seals drawn into fish-ponds by the huge litter of fish remains... We saw the same at Gandava [Ghent] and in the pool of Reggio at the Fountain of Bellae Aquae…"

By the 18th century, however, naturalists were already commenting on the rarity of the species in the Croatian Adriatic and along Dalmatia's 'Coast of a Thousand Islands' – areas in which monk seals had previously been noted for their abundance (Brusina, 1889).

[27] Cf. Aristotle, *Historia Animalium*, 608b, 18-26.

Even in the first modern scientific description of the species dated 1779, Professor Johann Hermann expresses his admiration for the "beautiful and rare animal" before him that had been captured among the northern Adriatic islands (Hermann, 1779).

Although Hermann may have been oblivious to any dark irony surrounding his scientific 'discovery' of *Phoca monachus*, his chance encounter with a solitary monk seal in a travelling show in Strasbourg was actually symbolic of the ongoing extermination of the species along the Adriatic coast.

The seal's drastic decline was already noted by the Dalmatian naturalist Nutrizio Grisogono in 1780, who observed that "While still common in the 17th century, the sea calves are now extremely rare."[28] One incident attesting to the seal's rarity in the region – at least in Italy, where the news was received – occurred in 1722, when a single specimen was caught off Rovinj in Istria. The event was apparently deemed so extraordinary that a leaflet was printed in Venice proclaiming the event (Brusina, 1889).

Although the Austrian historian, Otto Keller, asserts that the monk seal was still numerous in the Adriatic during the late 19th century, the Dalmatian naturalist Spiro Brusina lists as many as sixteen other writers, from 1826 to 1860, who speak either of its local or regional scarcity. Brusina himself declares: "Today the monk seal is indeed rare in our country; I have seen live ones from the Algerian coast, stuffed ones in various museums, but not one in our seas" (Keller, 1887; Brusina, 1889).

The species appeared to be faring somewhat better in the east, even if the trends that were to culminate in today's much-diminished and fragmented population were clearly evident even in the late 1800s.

Despite noting its disappearance from Greek mainland coasts, Keller (1887) observes that while "one sees them only rarely, and in calm weather or in daylight, probably never… there is hardly an island in the Aegean, big or small, where several couples of these animals do not have their abode."

Reiser (1912) offers similar comparisons, reporting that seals are found in the Ionian waters of Greece more often than in the Adriatic, and are "even more numerous in the Aegean."

In many areas, Mediterranean monk seals were still sufficiently abundant to supply limited local needs well into the 20th century. In certain specific places, they were also numerous enough to drive prosperous, though short-lived, cottage industries in oil and hides.

Returning from the Egyptian Campaign in 1798, soldiers of Napoleon Bonaparte's army put in for supplies at the Ionian island of Zakinthos, and observed that local people hunted seals for their oil, which was used as lamp fuel. Seal skins and oil extraction are also said to have brought a certain measure of prosperity to the village of Assos on the neighbouring island of Cephalonia until the beginning of the 1900s, when the industry finally collapsed due to over-exploitation of local colonies (Marchessaux & Duguy, 1977).

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[28] *Notizie per servire alla Storia naturale della Dalmazia.* Trevigi, 1780, p. 46.

Captain Francis Beaufort was already on the cusp of fame when, in 1811-1812, he undertook a survey of the eastern Mediterranean on the orders of the British Admiralty.[29] As his ship, HMS Frederikssteen, surveyed the islets scattered along the Anatolian coast of present-day Turkey Beaufort noted in his logbook that, on Provençal Island, "the rocks abound with seals" (Beaufort, 1818).

Known today as Dana Adasi, the rocks are bare save for the odd seabird, a mute testament not only to the exploitation or persecution of the species along this wild stretch of coast, but also to a radical shift in habitat preference driven by human pressures (Johnson & Lavigne, 1999a; Johnson & Lavigne 1999b; Hasan Örek *pers. comm*., 1995).

Monk seals were described as being plentiful enough in the Turkish Black Sea in the 1930s to supply local needs for leather shoes and harnesses, with seal leather or *çarik* as it was known, even being sold to mountain villages, according to the testimony of former seal hunters and their descendants. Sufficient numbers of seals were also found to supply zoos, travelling shows and fairs up until the 1970s (Cem Kiraç *pers. comm.,* 2001). The inability of one seal catcher to fulfil a 1973 order for a female specimen from Gülhane Zoo, however, has been cited as an indication of the species' growing rarity at that time. Today, the monk seal in the Black Sea is considered effectively extinct (Kiraç, 2001).

Taking advantage of a coastline still remote and inhospitable to human settlers, monk seals also continued to thrive on the shores and off-lying islets of Libya and Egypt in the early nineteenth century. Possibly, religious mores also played a role in safeguarding the seals from human persecution since, in Egypt for example, the animal was known as *Sheik el Bahr*, the venerable old man of the sea. Admiral W.H. Smyth, surveying the north African coast between 1810-1824, reports that "between Alexandria and Benghazi... we found fish and seals in abundance" (Norris, 1972). A century later, however, the Zoological Society of London implied that the herds had vanished during the intervening years. In June 1914, an immature monk seal was put on display in the Giza Zoological Gardens, and several were reportedly killed during the Great War. In 1920, a colonel in the Lancashire Fusiliers reported that a solitary seal continued to live around the town of Solum,[30] midway between Alexandria and Benghazi, and that "strict orders had been issued that it was not to be shot at" (Flower, 1932).

Another incident attesting to the seal's apparent rarity occurred around 1933, when an old female seal was captured by fishermen at Port Said. Convinced "that this animal was a solitary wanderer from high northern latitudes," writes Bertram (1943), "she therefore suffered the fate of being crammed alive into a box and sent by train closely packed in ice." The unfortunate seal is reported to have died en route to Alexandria, possibly from hypothermia.

During the mid-19th century, the species was also known to frequent the isolated shores of Algeria and the rugged and inaccessible cliff-bound coasts of Corsica. While still

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[29] Seven years earlier, at the age of 31, he had devised a system for measuring wind velocity, which would subsequently come to bear his name, the Beaufort Scale. As a reward for his efforts, Beaufort received a knighthood and was elevated to the rank of Admiral.

[30] Now known as *As Sallûm*.

sighted along the Ligurian coast of Genoa, the monk seal proved a far rarer inhabitant of the French Mediterranean during this period, though individuals were occasionally taken on the rocks of the province of Var and on the islands of Hyères (Gervais, 1848).

Persecution by fishermen and hunters continued to take its toll in the region. The seal disappeared from mainland France in 1930-35 (Duguy & Cheylan, 1979), while the last two seals of Corsica were exterminated in 1970, just months before the official inauguration of the Regional National Park (Ronald & Duguy, 1979).

The species met a similar fate in Italy. Although considered relatively common in the mid-1800s along certain stretches of coast, the species is today considered effectively extinct in the country, despite continued sporadic sightings in Sardinia and southern Italy – possibly representing seasonal movements from other regions (GFM, 2002; Johnson, 1998a; Lungo, 1935).

In contrast to mainland France, the species clung tenaciously to survival in the remoter regions of the western Mediterranean in the 19th century. A naturalist's report from 1875 relates that the *sea wolf* or *sea dog*, known locally as *Vey mari*, 'the old one of the sea', was very common along the shores of the Spanish Balearic islands (Barceló y Combis, 1875). Following an all too familiar pattern, by 1914, surveys were already reporting the disappearance of the species from the archipelago (King, 1956). Today, the only sand-loafing animals that congregate on the shores of Mallorca, Minorca, Ibiza and Formentera are of the human, package-tour variety.

HABITAT

A possible cause-and-effect relationship between monk seal habitat, persecution and temperament has been discussed in detail in the companion to this monograph, *Monk Seals in Antiquity* (Johnson & Lavigne, 1999a; see also Johnson & Lavigne, 1999b).

Comparative interpretation of ancient texts has revealed a fundamental deterioration of monk seal habitat since ancient times, driven by human disturbance and persecution. Over the centuries, monk seals have gradually been displaced from the open sandy beaches and great arching caverns that once formed their principal habitat, and that encouraged gregarious behaviour, to occupy increasingly marginal habitat. In the 20th century, with habitat pressures intensifying because of a boom in tourism, this has culminated in some areas in the use of caves that cannot even meet the essential biological needs of the species.

Habitat deterioration has acted selectively against colony formation, in favour of individuals or individual mothers with pups. By severely limiting social interaction, mating and breeding success has been compromised, as has the animal's gregarious behaviour for which it was so renowned in ancient times (Johnson & Lavigne, 1999a, 1999b; Güçlüsoy, Johnson & Karamanlidis, 2002).

As noted elsewhere, the shy and retiring nature of the monk seal in the 20th century has led some writers to assume, incorrectly, that the naming of the species was inspired by its monastic temperament and behaviour. Many historical records, however, portray a

species of radically different character, highlighting the seal's tameness and friendliness towards humans, its curiosity, boldness, and even audacity.

Such traits are amply demonstrated in a unique poem by the Benedictine monk Mavro Vetranic (1482-1576).

According to legend, Vetranic spent up to 40 years as a hermit on the tiny Dalmatian islet of Sveti Andrija, lying about four kilometres south of Lopud island in the Dubrovnik region (Brusina, 1889). The son of a Dubrovnik merchant family, he entered the Benedictine order as a young man and, in 1515, founded a monastery on the island of Mlet. In 1517 he travelled to Italy without permission and was punished with exile by the Dubrovnik senate. Pardoned five years later, he returned to Dalmatia and entered a monastery on the island of Lokrum. Eventually returning to Mlet, he rose to the rank of Abbot and, in 1534, became prior of the hermitage on Sveti Andrija, remaining on the islet until 1542. Highly respected among his peers, he was eventually appointed President of the Congregation of Mlet, a grouping of all the Benedictine monasteries of the Dubrovnik area. He died at the ripe old age of 94, having become the most prolific Croatian writer of his time, his works mainly consisting of Christian religious verse reflecting a mixture of medieval and Renaissance attitudes (D.J.L. Johnson *pers. comm.*, 1996).

Ironically, it was on Sveti Andrija that the hermit monk, seeking seclusion from the world, wrote his verses about a monk seal, a creature who seemed anything but monkish in its behaviour. Indeed, in the poem, called 'Remeta' – the Hermit – Vetranic minces few words in describing his battle of wills with this 'bear of the sea'. Despite the rhetorical literary style, quite typical for the period in which it was written, the poem actually conveys a certain humorous affection for the animal's antics and impudence:

What misery still, what grief
One has to suffer, one has to endure
From the bear of the sea
Who oft wages war with me;
For with rod and line
When I start to make my catch,
Devoured is all my fish,
As that wretched creature eats his fill.
When I make to chase him off,
Cares he not nor listens,
But begins to grin
And wink his eyes,
And as you chase that wild thing off,
To watch him gives no pleasure
As he grins with his whiskered jaws
And twists his snout at me in grimace.
Even greater irritation overcomes me
As he gently slaps the water as he swims

And mocks me miserable man
As he grimaces at me over his shoulder.
Then he dives and lets off wind
And the sea begins to hubble-bubble;
Just as verily it boils in hell
Raising a stench as far as Psunj.[31]
Then at the early break of day
Laments there are and sorrows,
As the rocks are all besmirched
Where he has defecated without shame.[32]

Another Benedictine monk, the Italian Mauro Orbini, also contradicts the modern perception of the monk seal as a shy and timid animal. In his historical treatise *Il Regno degli Slavi*, published in 1601, Orbini testifies to the animal's audacity and keen intelligence. In so doing, he also provides an additional fragment of evidence: that fishers during the Renaissance continued their war against the seals as fish-stealing, net-destroying pests. Writing of the impressive natural lagoon on the Dalmatian island of Mlet, known as 'the Great Lake' in Serbo Croat, he observes:

> "Sometimes sea bears enter the lagoon and cause great loss of fish. As they try to leave there for the open sea, great nets are stretched for them across the straits through which they have to pass. When they see themselves caught by them and attacked by the fishermen, they mount a surprising resistance. While they are trapped within the bay they often go along the shore letting themselves be seen without any fear, showing by certain actions they make that they understand everything that is said to them. And because I have never found myself present to witness such a thing, I scarcely allowed myself to be persuaded that a fish could understand what is said to it" (Brusina, 1889).

Historically, other texts speak of seals occupying diverse habitat, including open sandy beaches, shoreline rocks, great arching caverns of the kind originally portrayed in Homer's *Odyssey* (Johnson & Lavigne, 1999a), and more protected caves with underwater entrances. Of the examples provided below, it may be significant that all of the larger seal herds described as occupying open beaches and shoreline rocks were in areas either remote or unaccustomed to human intrusion. Moreover, most were not destined to survive long after their discovery. On the other hand, historical accounts portraying the seal finding refuge along desolate, cliff-bound coasts and in inaccessible caves, appear to originate in areas where the species was already under severe human pressure.

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[31] Lying on the eastern shores of nearby Lopud island.
[32] Translated by D.J.L. Johnson, from Brusina 1889.

Along the Atlantic seaboard of NW Africa, Portuguese explorers found as many as 5000 monk seals occupying the sands of the Rio de Oro, and were even taken aback by the docility and tameness of their prey (Zurara, 1437). A sizeable herd of seals was also discovered by hunters in 1402, occupying the sandy beaches of Lobos island in the Canary Islands (Bontier & Le Verrier, 1404), and the shores of Madeira in 1419 (Frutuoso, 1873; Sarmento, 1948).

In contrast, it appears that monk seals were unknown to the inhabitants of mainland Portugal even in the 1500s. When Madeiran colonist and navigator Álvaro de Ornelas brought sea-wolves back to the Kingdom as curiosities, we are told, they "gave rise to much admiration, even more so for they nursed their young, and so they called them *women of the sea*" (Sarmento, 1948).

Gesner (1558) implies that the Mediterranean sea calf can mainly be found roaming along beaches, but are also "in the habit of entering sea-caves, evidently for sleeping or giving birth." Rondelet (1554), with his firsthand knowledge of the Provençal coast, notes that "the seal sleeps out of the water in the sun, on the sand of the shore or on a rock."

Eighteenth century reports speak of seals sleeping on Sardinian beaches, where they would sometimes fall prey to hunters and shepherds (Cheylan, 1974). Prior to their eradication in the 20th century, remnant seal colonies also occupied the great arching caverns and labyrinthine cave formations (Fig. 17) characteristic of the island (Johnson, 1998a). Under relentless pressure by fishermen, the seals began to seek refuge along

Fig. 17. The great 'arching caverns' of the Mediterranean were once traditional habitats of monk seals, but eventually proved too vulnerable to hunting pressures and tourism disturbance. Pictured here is the *Golfo di Orosei*, Sardinia, once a favourite monk seal haunt.
Photo: Matthias Schnellmann

Fig. 18. A monk seal seeks shelter in a crevice-like cave on the Turkish Aegean coast.
Photo: Cem O. Kiraç.

remoter stretches of coast and in more inaccessible caves, particularly those with underwater entrances (Bareham & Furreddu, 1975). Lungo (1935) postulated that monk seals in Italy had only managed to save themselves from complete extinction by retreating to inaccessible caves in pairs or small groups, rather than congregating in larger colonies as other seal species.

While noting their increasing rarity in his 1774 work *Journey to Dalmatia*, abbot A. Fortis, wrote that the seals "love ground scattered with rocks and little islands so that they can come out frequently into the air" (Zupanovic, 1966).

During his voyage to the eastern Mediterranean in 1812, Captain Francis Beaufort discovered that on the uninhabited islet Provençal, "the rocks abound with seals" (Beaufort, 1818).

Johann Hermann's description of the species' habitat – although based on hearsay – appears to tie in with his portrayal of its rarity and known records of the seal's exploitation in the Adriatic. "According to one of the owners," notes Hermann, "one sees them at steep and inaccessible cliffs, where they sleep under the open sky in summertime. In wintertime they are said to sleep in caves, whose entrances are under water" (Hermann, 1779).

Othmar Reiser (1912), curator of the National Museum of Bosnia-Herzegovina in Sarajevo, records similarly inaccessible cave habitat in the Aegean. "His Highness Erzherzog Ludwig Salvator," he writes, with a suitably extravagant verbal bow, "the most excellent describer of the two islands Paxos and Antipaxos, reported the existence of caves there which are only accessible from the sea, and which have served as shelters for the seals since time immemorial" (Reiser, 1912).

Centuries-old human persecution, both by hunters and fishermen, is likely to have eradicated surviving seal herds on all but the most remote islets of Greece by the 19th century (Johnson & Lavigne, 1999a; Keller, 1887).

Austrian historian Otto Keller notes that, while already scarce along the shores of mainland Italy and Greece, the seal could be found scattered throughout the Aegean archipelago in the late nineteenth century, with "several couples" to every island. Inhabiting steep cliff-bound coasts and inaccessible caves, writes Keller, "they have found a refuge from the persecution of their many enemies" (Keller, 1887).

As already discussed at length elsewhere (*e.g.* Johnson & Lavigne, 1999a, 1999b; Güçlüsoy, Johnson & Karamanlidis, 2002), deterioration of habitat has reached such extremes in certain areas of the Mediterranean that monk seals have been observed taking refuge in crevice-like caves with no haul-out area, obliging the solitary animals to rest while floating in rock pools (Fig. 18) (Güçlüsoy, 1996; Harun Güçlüsoy *pers. comm.,* 1997; Cem Kiraç *pers. comm.,* 1997).

Unsuitable cave habitat has also been cited as a serious factor in the decline of the species (Wijngaarden, 1962; Bareham & Furreddu, 1975; Anderson, 1978, 1979; Sergeant et al., 1979).

Storm surges can wash weaning pups out into the sea to drown or to become stranded, the animals eventually perishing from hypothermia (Johnson & Lavigne, 1999a; Cedenilla & Haya, 2003).

Historically, a related factor in the apparent change in temperament of the species may lie in natural selection, wherein seals offering the easiest targets for the hunter's club or rifle were the first to be eliminated: the curious or audacious seal, rather than the timid individual; the beach-loafing seal rather than the seal occupying an underwater entrance cave. Even contemporary research, for example, shows that inexperienced pup or juvenile seals are more likely to end up entangled in fishermen's nets, rather than more cautious adult seals (Güçlüsoy, Johnson & Karamanlidis, 2002). As indicated elsewhere in this study, for the most part, juvenile seals also proved easier targets for live capture.

Recent conservation successes in Madeira have demonstrated that such negative trends in habitat preference and behaviour are by no means irreversible. As a result of stringent conservation measures applied in the Desertas Islands, for example, including strict limits on invasive scientific research, monk seals are gradually returning to open beaches to loaf in the sun, give birth and nurse their pups (Neves & Pires, 2000; Neves, 2002). Encouraging seals to lessen their reliance on caves, and to return to open beaches is also a priority for conservation efforts underway on the Côte des Phoques (Cabo Blanco peninsula) in the western Sahara (González et al., 2002; Cedenilla et al., 2002).

EXPLOITATION AND HUNTING

Available evidence suggests that the Mediterranean monk seal continued to be exploited for a wide range of uses, although hunting intensity – tied as it must be to local population abundance – is often difficult to quantify.

While dutifully reporting the extensive applications to which seals and their derivatives were put in ancient times, the Renaissance naturalists also detail Medieval and contemporary uses for the animal's fur and oil in the manufacture of leather goods and the preparation of medicines. Other sources record the production of oil from the newly-discovered Atlantic populations of the monk seal in the Canary Islands, Madeira and the western Sahara. In contrast, later literature, particularly works originating in the 18th and 19th centuries, clearly demonstrate how surviving monk seals, already recognised as rare by naturalists and hunters alike, were being targeted for museum collections and for live capture by circus menageries and zoos.

Hunting methods

Seal-hunting weapons, at least until the age of the firearm, appear to have changed little since ancient times, with the club, spear and twine net featuring prominently. Accordingly, capturing and killing the animals could evidently be an arduous affair.

Because of a hide that is hard, thick yet pliable, writes Rondelet, "…it is difficult to hurt them with blows to their rounded bodies for they have an abundance of flesh and blubber. Not without favourable circumstances can they be killed and it is the parts with a small covering of flesh and blubber that are most easily damaged, namely the nerves and so also the brain" (Rondelet, 1554).

Gesner provides additional detail. Because of their "distinct plumpness and the hardness of their hide," he writes, the sea calf "is scarcely injured by arrow or firearm… If they are netted, then they tear even the strongest twine" (Gesner, 1558, 1563).

In an indication that the seal continued to be viewed as a pest by fishermen, as well as a natural resource, he adds that fishers, to save their catch and their nets, must "smite the animal with oars or clubs on the temple," delivering blows which will bring its life to a swift end.

While tools and weapons appear to have remained largely unchanged since the days of Aristotle and Pliny, there were variations in method. In a tacit acknowledgement of the monk seal's renowned cunning, hunters and fishermen might attempt to outsmart their prey, entering a battle of wits that would not necessarily end in their own favour (see Habitat, page 34).

Gesner (1558, 1563) implies that the "great love" or attachment that pups display towards their mothers can also be their undoing, since "the young ones are mostly caught with the old ones."

In an apparent reference to mother seals keeping watch over their inquisitive, straying pups, Gesner adds that the creatures are also captured when they venture close to shore while "following the voice of their young children."

Quoting his contemporary Selandus, the Swiss naturalist also writes that the seals would sometimes be enticed to their doom by the voices of children on the shore. Apparently betrayed by their own curiosity, as soon as the animals reached the shallows or tried to haul out, they would be quickly drawn into waiting nets (Gesner, 1558).

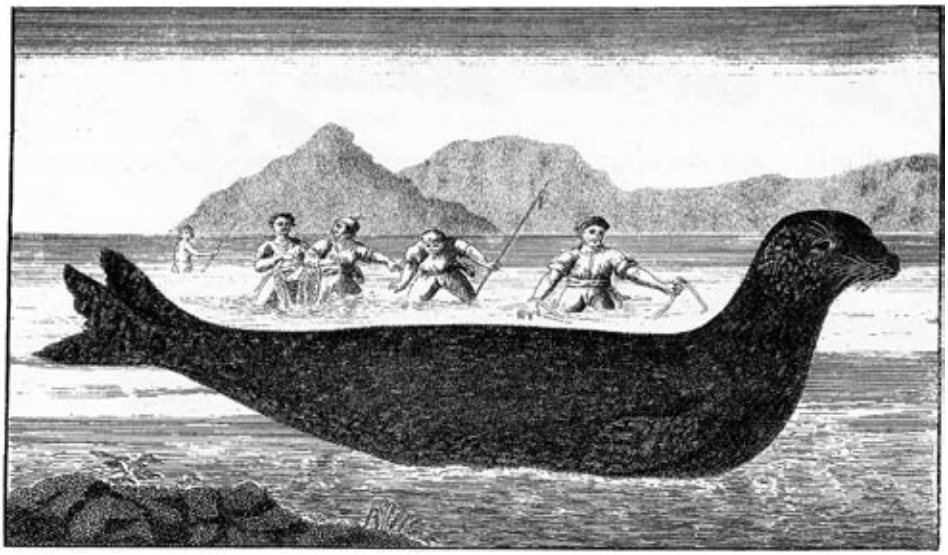

Fig. 19. Monk seal capture. The illustration, an etching with stipple engraving, ca. 1800, is considered to be an Italian broadside for an exhibited monk seal. Courtesy of Barthelmess whaling & sealing collection, Cologne, Germany.

A similar account, heard from Dalmatia in 1601 (see Habitat, page 34), suggests that inquisitive adolescent seals may have proved easier prey than more wary adults, a phenomenon that even today continues to have a bearing on seal mortality through entanglement (Brusina, 1889; Johnson & Lavigne, 1999a; Johnson & Karamanlidis, 2000; Güçlüsoy, Johnson & Karamanlidis, 2002).

Elsewhere, Gesner – despite the comically muddled nature of his description – implies that the hunt could be a violent undertaking, fraught with risk. "The sea-calves are not caught and fought by the fishers without effort," he writes, "because, as they are attacked on the shore, they are said to throw up a lot of sand with their hind-feet, so that nobody is safe from this, and everybody gets soiled" (Gesner, 1558, 1563).

Seal hunting at the Rio de Oro

Having benefited from the absence of Roman legions, animal traders, hunters and commercial fisheries, monk seals continued to live in large herds along the largely unexplored Atlantic seaboard of northwest Africa.

It was not until 1434 that Portuguese explorers landed on these untamed coasts, and discovered thousands of monk seals. Almost immediately, an intensive and lucrative trade in skins and oil was established (Monod, 1923, 1932, 1948).

Constantly vying with Spain over political and territorial expansion, Portugal was determined to increase its sphere of influence in Africa. While Spain eventually became preoccupied with Columbus' elusive vision of a western trade route to the Orient – his celebrated 1492 expedition accidentally stumbling upon the New World instead – Portugal's colonial influence in Africa was reaching its height by 1500.[33]

The first expeditions to Africa's Gold Coast were recorded for posterity by an official chronicler, Gomes da Zurara. In his book, *The Guinea Chronicles*, he relates how the Portuguese Infante, eager to establish new trading opportunities, dispatched explorer Afonso Gonçalves Baldaya in a cargo vessel to make contact with the mysterious "moors" or "pagans" who were believed to inhabit the region (Zurara, 1437).

"But these are people, no matter how beastlike they may be," proclaimed the Infante, "and they need to be governed... I command you to penetrate this land as far as you can and that you work in order to learn about those people, perhaps taking one captive, so that you may become acquainted with them."

It was in "the year of our Lord Jesus Christ one thousand four hundred and thirty-six," relates the chronicler, that Afonso set sail, eager to fulfil the Infante's imperious command. Venturing 70 leagues further than his previous expedition, the *barinel* eventually reached the shores of the Gold River, the Rio de Oro, situated at the Bay of Dakhla in the western Sahara. Here, the ship anchored, and Afonso ordered a scouting expedition into the interior. Two young adventurers, equipped with spears and swords, and eager for glory, set off on horseback, but soon fell foul of a band of natives. In the skirmish that ensued, one lad was wounded in the foot, and both were pinned down until a gathering dusk cloaked their retreat to the ship.

The following morning, Afonso ordered his canoe prepared and, with a few trusted companions, paddled up the Rio de Oro to the site of the battle. His hopes were soon dashed. The native camp lay abandoned, save for a few poor, scattered belongings that the Moors had left behind in their hurry to escape the strange intruders. Disappointed by his failure to seize and interrogate one of the pagans, he had these primitive artefacts loaded into his canoe as proof of his efforts.

Upon nearing the mouth of the Gold River as they paddled back to the *barinel*, Afonso and his crew sighted their first seals. Literally thousands were suddenly in their field of vision. According to the description of the encounter, the sand-loafing seals appeared to display the same docility as their Mediterranean cousins in much earlier centuries, and therefore proved easy prey for Afonso's men (Johnson & Lavigne, 1999a).

"Upon seeing on a reef at the mouth of the river a large number of sea-wolves," relates Gomes da Zurara, "which, according to the estimates of some, amounted to five thousand, he ordered killed those that could be killed and had their furs loaded onto the ship. Either because they were easy to kill or due to the skill of those who carried out the task, many of those wolves were killed."

Despite the windfall in skins and oil, Afonso was still dissatisfied, having failed to take captive any of the elusive natives. He therefore ventured a further 50 leagues "to

[33] The People's Chronology, Henry Holt and Company, Inc., 1994.

see if he could capture a man or at least a woman or child in order to satisfy the will of his master." In terms of human cargo, however, the explorer was destined to return to Portugal empty-handed.

It was not until 1437 that another Portuguese ship was dispatched to the Gold River to fill its hold with the furs and oil of the sea-wolves. The death of King Eduard the following year threw Portugal into the turmoil of civil war, and da Zurara tells us that "all other events were forgotten in order to deal with the dangers and troubles in the kingdom." Preoccupied with these disputes and political intrigues, he adds, the Infante "stopped sending ships to that land" (Zurara, 1437).

In 1441, with a degree of calm restored to the kingdom, the Infante ordered his young wardrobe keeper, Antão Gonçalves, to captain a small ship and return to the Gold River. Apparently having lost his interest in capturing natives, "the reason for this voyage, as instructed by his Lordship," writes da Zurara, "was none other than to load that ship with a great quantity of hides and oil from those sea-wolves." It appears to have been a lucrative undertaking. "The hides were taken," explains one commentator in 1562, "because in these times they were much valued" in the kingdom (Zurara, 1437; Monod, 1932).

Antão Gonçalves had fulfilled the command of his master, his ship's hold brimming with hides and casks, but the young man was eager to pursue his adventures rather than return home as ordered. He assembled his 21-man crew on deck, and addressed them with a rousing speech: "Friends and brothers, our cargo is complete, as you can see, so the principal aim of our mission has been accomplished, and we could well return should we wish to limit our toil…" He then proposed an adventure that would gladden the men's hearts, providing relief from the laborious and tedious task of hunting, skinning and melting-down seals – a hunt for native slaves (Monod, 1932).

According to a 16th century historian, the seal pelts later became objects of trade with the Moors. One explorer at the Rio de Oro, Gomez Perez, supposedly received sea-wolf hides from the natives, and upon his return from the kingdom with unspecified goods, was promised gold and slaves in exchange (Monod, 1932).

These first tentative expeditions to the Gold River paved the way for hunting on a more intensive, industrial scale, with 15th century Portuguese explorers dividing their time between lucrative massacres of seals and the equally profitable slave trade (Monod, 1932). Indeed, within a few years of the sea wolf discovery, a purpose-built installation to process seal hides and oil had been constructed on *Ylha de Lobos*, an island or sandbank in the estuary of the Rio de Oro (Monod, 1948)[34]. As a result of this free-for-all, the Gold River seals were already suffering a drastic decline as the century wore on (Marchessaux, 1989).

The seals, however, continued to thrive further south. A map of Africa dating back to 1749 marks an apparently fictitious little island off the Saharan coast, about 20 miles north of Cap Blanc.[35] The cartographer, Danville, named it *Ile des Lobos*, and though

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[34] From *De prima iventione Gujnee* by Diogo Gomes (late 15th century)*: "... Dominus Infans ... praecepit nautori seu capitaneo navi ut ibi in Insula luporum remaneret. Et sic remanserunt illic mensibus tribus et interfecerunt innumerrbiles lupos marinos quos secum apportaverunt."*

[35] See Monod, 1932, p. 259, Fig. 2, A & B.

the island may never have existed at all, it pinpointed an area well known to Spanish explorers and hunters as being frequented by seals (Monod, 1923). Indicating a similar abundance of seals was *Sur via de Lobos*, a point south of Cap Corveiro. Around Cap Barbas, midway between the Gold River and Cap Blanc, no less than three sites once bore the name of the sea wolf: *Via Lobo la Nueva*, *Via Lobo la Vieja* and *Cabo al Sur de Via Lobo* (Monod,[36] 1932). An inventory listing the natural wealth of the Guinea coast,[37] published as the 15th century was drawing to an end, lists sea wolves – *gattas marinas* – as among the merchandise imported by ships plying the trade route between Europe and the land of the Moors (Monod, 1948).[38]

Writing in 1932, the prominent French naturalist Théodore Monod presents a damning critique of the colonial plundering of the region. In a particularly prescient view, he also takes an acerbic swipe at contemporary nature conservation, already marching inexorably towards 'nature management' and the sustainable exploitation of species. These human endeavours, he implies, like exploration and conquest before them, were also portrayed as essentially idealistic endeavours. Just as the conquest of the Rio de Oro by massacre and slavery, he writes, "proves anew that the pursuit of disinterested geographical knowledge, and the expansion of 'Christ's Kingdom', were never the only motives of colonial conquest, so the slaughter of the Atlantic seals would today be called "rational exploitation" (Monod, 1932).

Seal hunting in the Canary Islands

The Atlantic archipelagos of Madeira, the Azores and the Canary Islands were also inhabited by monk seals. Crude maps of the Canary Islands, dating back to 1339, mark a single islet as *Insula de Vegi mari*, literally "island of the old ones of the sea." In the late 14th century, navigators marked it as *Insula de Lobos* or "island of the sea wolves." Known today as *Isla de los Lobos*, the rocky, volcanic island lies between Lanzarote and Fuerteventura, whose rocky shores and sandy beaches may also have been a haven for seals long ago (Hernandez, 1986; Monod, 1923).

In 1341, Portuguese explorers Angiolino de Tegghia and Niccoloso de Recco recorded the species in their inventory of the wealth of the Canary Islands and, among other booty, collected seal hides, *phocarum exuvias*, before sailing away (Hernandez, 1986[39] ; Monod, 1932).

Despite such exploratory forays, the seals were still abundant at the turn of the century.

In 1402, the Norman knight Jean de Bethencourt set sail from La Rochelle to conquer the Canary Islands on behalf of Henry III of Castile. Acting as his official chroniclers

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[36] Quoting Stassano, Ann. Agric. (Roma), 1890, p.33.

[37] *De inventione Africae maritimae et occidentalis* by Jerome Münzer.

[38] See the translation by Basilio de Vasconcelos: *Itinerário do Dr. Jerónimo Münzer (Excertos)*, O Instituto, Coimbra, 80, 1931, no 5; t. r p., 1932, p. 53, p. 57.

[39] Quoting *La Expedición Portuguesa a las Canarias en 1341*, by B. Bonnet, 1943.

were Father Pierre Bontier, a Franciscan monk, and the vicar Jean Le Verrier. Ostensibly a voyage of exploration, settlement and religious conversion, the chronicles of the two religious men, despite their boundless loyalty to de Bethencourt, nevertheless provide a intriguing record of how the Canary Islands, too, fell victim to the twin onslaughts of the sword and the cross. While their objectivity might be suspect, Bontier and Le Verrier make little effort to conceal how an expedition fraught with petty rivalries almost from the outset swiftly degenerated into bloodshed, mutiny and native rebellion (Bontier & Le Verrier, 1404).

With de Bethencourt returning to Spain to petition the King for supplies, authority fell to his second in command, the knight Gadifer de La Salle.

Oblivious to the conspiracies being worked against them, say the chroniclers, in October 1402 Gadifer and his men "passed to the island of Lobos to procure some seal skins, to make shoes for the crew; and they remained there for some days, till at last their provisions failed them" (Bontier & Le Verrier, 1404; Gil & Martín, 1993; Monod, 1923, 1948; Hernandez, 1986).

It was only upon returning to the fortress at Rubicon that Gadifer became acquainted with the rebellion being fomented against his and his master's rule. Backed by the crew of a Spanish ship, say the chroniclers, Gadifer's jealous rival Berthin de Berneval summarily relieved the knight of his authority and much of his stores, marooning him on Lobos, effectively destitute.

Berthin was heard to say: "I wish that Gadifer de la Salle should know that if he were as young as I am, I would certainly kill him, but as he is not, I may perhaps forego that wish; yet if it takes my fancy, I will go and drown him off the island of Lobos, and let him fish for seals there" (Bontier & Le Verrier, 1404).

In fact, so prolific were the seals on Lobos that, notwithstanding the stormy adventures of these proto-conquistadors, hunting quickly turned into a profitable little industry.

"The number of sea-wolves that come there is astonishing," write de Bethencourt's chroniclers, "and every year might be got a sufficient quantity of skins and fat to fetch 500 gold doubloons and more" (Bontier & Le Verrier, 1404; Monod, 1932; Hernandez, 1986).

A history of the Canary Islands conquest, published in 1602, reports that "many sea wolves were killed as they emerged from the sea to take the sun on the sand, and from their skins belts were made" (Hernandez, 1986[40]).

Such rampant exploitation inevitably took its toll upon the population. By the late 16th century, the seals had already become so rare that an air of myth surrounded reports of infrequent sightings. "Several years ago on the island of Canaria, on its east coast," wrote one Spanish historian in 1592, "certain fishermen saw a man of the sea under the water, sitting outside the entrance to a cave... On Lanzarote, on the west coast, a man of the sea has also been seen on three occasions coming out of the sea to bathe in the sun on top of a high rock" (Hernandez, 1986[41]).

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[40] Quoting *Historia de la Conquista de las Siete Islas de Canaria* by Abreu Galindo, 1602.

[41] From *Descripción e Historia de Reino de las Islas Canarias* by L. Torriani, 1592.

Thirsting to explore the uncharted seas to the south-west, in 1418, Prince Dom Henrique, the fifth son of the Portuguese King and Queen, dispatched two of his squires on another voyage of discovery towards Guinea (Anon, 1995).

João Gonçalves Zarco and Tristão Vaz sailed as far as the Porto Santo islands before their restless crew convinced them to return home. Though the two explorers were eager to press on, a threatening, nebulous apparition hovering over the south-western horizon had instilled terror in their deck hands.

Back at Court, Infante Dom Henrique was clearly unimpressed by the news. Later to become honoured as 'Henry the Navigator' for his exploratory feats, he was convinced that the strange clouds signified not some evil marine omen, but another undiscovered island. Reminding his squires of the folly of superstition, he commanded them to prepare for a return voyage in the summer of 1419.

After making landfall at Porto Santo to allow colonists to disembark and to take on supplies, the ship set off on its final leg, braving the unknown seas to the south-west. This time, Zarco and Vaz were determined to sail on towards the ominous, levitating ridge of cloud that turned red, purple and orange with the rising and setting sun. Again, the apparition struck terror in the hearts of the crew. Just why the clouds remained stubbornly immobile despite a strong wind mystified them, and they suspected demons at work. Jittery and sullen, the caravel sailed on through uncharted waters until, days later, the lookout finally sighted land – the lush and mountainous island of Madeira.

For Portugal, it marked a great discovery. On the orders of the king, Zarco and Vaz were rewarded with governorships of the key Madeiran provinces. Zarco settled with his family around a small bay west of present-day Funchal, where he discovered a colony of 'sea-wolves' stretched out along the volcanic pebble beaches, and inhabiting a large sea cavern (Anon, 1995).

The event is recorded by Dr. Gaspar Frutuoso, a 16th century historian hailing from the Azores. Exploring the thickly forested coast in canoes, he writes, Zarco and his men eventually came across an inlet "where nature has created a large grotto, in the form of a rock chamber in the rock itself... and they were stupefied by the number of sea-wolves they found" (Frutuoso, 1873; Sarmento, 1948).

Zarco duly christened his new-found settlement *Câmara de Lobos*, or 'Chamber of the Wolves', a name that the fishing village retains to this very day. As an additional reward for his services to the Crown, the Madeiran governor received his own shield and coat of arms, bearing the emblem of a sea-wolf sitting atop a lambrequin. A tower was also built in homage of his discovery, which sported a gold cross at its summit and two sea wolves leaning against the edifice as if wishing to climb it.

The king-of-arms, however, frowned upon the design, considering the sea wolf an animal unfit to adorn such august military insignia. At his insistence, the seals were removed from Zarco's shield and replaced with "carnivorous wolves" to reflect the Kingdom's potent military prowess (Sarmento, 1948).

Such disdain for the sea wolves quickly turned into outright hostility, and in this, Dr. Frutuoso conjures up a vivid image of the past:

"The seals sleep outstretched on the beach... disinterested, not dreaming of the new enemy which was coming to take them by surprise in a barbaric fashion on the island, offered to the navigators of the Infante for their good fortune, who, not having any Moors with which to do battle, killed many of them and had a great feast of the killing" (Sarmento, 1948).

Exploitation of the species for its fur continued well into the 20th century. Cadogan (1945) reported that a consignment of some 25 seal pelts had been seized by Customs officials at Funchal in 1943-4, but also noted that it was not thought likely "that any further attempt would be made to commercialize them for the present."

Seal hunting in the Azores

Monk seals also lived on the distant and windswept Azores, yet like their cousins in Madeira, they were soon to fall victim to Portuguese explorers and colonists. While touring Venice in 1428, Dom Pedro, the Portuguese Infante, is said to have acquired a parchment map of the world of such prescient detail that it even marked the sea route to India and the Cape of Storms.[42] According to tradition, it was this unique chart that guided him west to discover the verdant isles of the Azores (Frutuoso, 1873).

Duly claimed for the kingdom in 1432 by navigator Gonzalo Cabral, the ships that followed in his wake brought a flood of pioneers eager for fresh opportunities in a virgin land. Of these first settlers, many turned to the sea for their livelihoods because of the archipelago's rich fishing grounds. Some rare, firsthand impressions of the islands in the 16th century are provided by Dr. Gaspar Frutuoso (1522-1591), who was born and raised on the Azores. Frutuoso implies that small seal colonies were scattered along the wild and inaccessible shores of the islands. Although fishers hunted the animals with spears, the treacherous seas that consigned many boats to a watery grave may have defended the seals from slaughter along the most remote cliff-bound coasts (Frutuoso, 1873).

Elsewhere, the seals proved easy prey for the fisher's spear. Beyond Forca point on the island of Santa Maria, writes Frutuoso, there is a dry brook and, a stone's throw away, "a small beach called Wolf Beach, where a few sea wolves come to sleep in a den located there." Towards Lagoinhas, he observes, the coast is marked by steep cliffs and inlets. "Fishermen from Sao Miguel island, who were fishing in the area, saw at a cave in the rock... some fourteen sea wolves which were there as if thrown, and because they were hunted and killed in this area, when they wanted to return to their den they were sometimes seen lifting their heads as if to see if someone was coming to disturb them and would keep watch like human beings" (Frutuoso, 1873).

[42] Now known as the Cape of Good Hope.

Furs, leather and oil

In the Mediterranean, monk seals also continued to be a valued source of fur, leather and oil – probably for as long as demand did not outstrip supply. Throughout the Middle Ages and Renaissance, seal skin was processed into a wide variety of products, ranging from ox harnesses to sailors' belts, from tunics to gloves. Among poorer coastal dwellers, it is probable that the skins were also utilised as crude winter garments or bed covers (Gesner, 1558, 1563).

"In Seythia, lying towards the north,"[43] writes Gesner, "they use such hides for cart-harnesses and pouches, and the fat to grease and prepare leather. Also in Italy, Spain, France, as well as other places, there are belts made of such leather, of which I have seen many, completely black, shining from blackness" (Gesner, 1563).

Gesner also notes that the skin is prized for its ruggedness and durability and "has come into use with us for military belts, woolly gloves and leather tunics" (Gesner, 1558). The same qualities also found favour among impoverished communities around the Black Sea as late as the mid-20th century (Kiraç & Savas, 1996).

Elsewhere, Gesner quotes Hieronymus Cardanus of Italy as saying: "We have a belt made from the hide of a seal; with it a sword is girded on when we ride."

He goes on to note: "I once heard of belts being made from the skin of a seal for the wearing of swords, three fingers in width and hairy; the hair was short, black, soft and smooth like a silken fleece shining from afar. Each one was to be sold for near six silver dinars" (Gesner, 1558).

Seal fat, often boiled down into oil, also had several uses, including medicines, lamp fuel, and the curing and treatment of leather (Gesner, 1558, 1563).

A Dutch map dating back to 1688 (Fig. 20) depicts a walrus over a misshapen rendition of the Northern Sporades islands, Greece, suggesting that long ago traders may have visited the archipelago to buy seal skins and oil (Johnson, 2001b).

Exploitation of the animal for its hide appears to have continued well into the 20th century, even if monk seal leather gradually attained an inferior status to leather derived from domestic animals.

In describing a seal hunt in the Bulgarian Black Sea, Reiser (1912) writes that the animal, trapped in shallow water, "was surrounded and killed with great difficulty. Each participant received a strip of skin wide enough to be able to make a pair of *Opanci*" – traditional thonged peasant sandals.

Similar sandals, reputedly of locally-harvested seal skin, can be found in the Historical and Folklore Museum on Alonissos (Fig. 21) in the Northern Sporades Islands, Greece (Johnson, 2001b). Use of seal skin in the manufacture of shoes and other footwear is still within living memory of older fishermen on Alonissos (Johnson, 1988).

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[43] Presumably Scythia on the shores of the Black Sea at the Danube river delta (Lexikon des Mittel Alters, 1977).

Fig. 20. The Northern Sporades, according to a 17th century Dutch chart.

Fig. 21. Thonged peasant sandals, reputedly of seal skin, from Alonissos, Greece.
Photo: Matthias Schnellmann

According to the then director of Forestry in Alexandropolis, monks inhabiting the monasteries of Mt. Athos continued to fashion belts out of seal hides in the late 1970s (Ronald, 1980).

In a 1996 review, Kiraç and Savas (1996), attribute the historical decline of the monk seal in the Turkish Black Sea to a variety of factors, foremost among them hunting.

Although nominally a protected species, the authors found that monk seals were targeted systematically by hunters with rifles during government-sanctioned dolphin hunts in the Black Sea. Exploited as a fisheries management tool for several decades in an ultimately futile effort to control overfishing, the dolphin hunts were only officially outlawed in 1983. "Seal blubber was the main product," write Kiraç and Savas. "Dolphin hunters melted the blubber in big tin barrels placed on a fire and usually two, rarely three, standard tin boxes of blubber were obtained per seal (1 tin box = 18 litres). People used to use blubber as a source of energy for lighting and as oil for leather processing."

Monk seal skins, the same authors report, were sold to the inhabitants of nearby mountain villages, to be used in boot making. In much the same way as Gesner recorded in the 16th century, villagers also continued to fashion seal pelts into harnesses, and leather straps used in fishing boats. As was the case elsewhere, although leather derived from the seal was valued for its strength and durability by Black Sea inhabitants, the material gradually became viewed with disdain as factory-made alternatives became more readily available (Kiraç & Savas, 1996).

In a separate interview conducted by Cem O. Kiraç in the Black Sea village of Gideros in 2001, the son of a seal hunter, Melahat Ural, offered further rare insights into the exploitation of the species during the 1930s:

> "My father must have killed 15-20 sea-bears [monk seals], I suppose. I remember there were plenty of seals around here then [in the 1930s]. First they killed the animal, then removed the skin from the body to let it dry and then cut the skin accordingly to produce *çarik* [leather]. It was impossible to find shoes in those times so we had to wear *çarik*. Our father used to provide us with *çarik* made from ox skin because *çarik* made from sea-bear skin was smelling foul. But we knew very well that *çarik* from sea-bear skin was very strong compared to that from ox skin" (Johnson, 2001a; Cem Kiraç *pers. comm.,* 2001).

Food

According to the Renaissance naturalist Guillaume Rondelet, coastal dwellers generally shunned eating sea calf despite it being "rich in flesh."

The reasons he provides are similar to those expressed by Galen in ancient times (Johnson & Lavigne, 1999a):

"Seals are of a soft, spongy and fat flesh to the point that it liquefies with prolonged rubbing by the hands and it quickly cloys, gives rise to nausea, engenders distaste and has

the smell of the wild. For this reason it is neglected by the people of the coasts where it is most frequently caught. It is more prized by those who live away from the sea" (Rondelet, 1554). If accurate, this last observation contrasts markedly with Galen, who implied that seal meat was the culinary lot of poor coastal dwellers who could afford nothing better.

Given its questionable palatability, the decline of the species, and growing human prosperity around the Mediterranean Basin, it is little wonder that the eating of monk seals appears to have gradually died out over the centuries. As is so often the case, however, there have been exceptions to the rule, even in the 20th century.

In 1914, F. Deveciyan, an amateur naturalist who was also director of the Istanbul fish market, noted that a few seals would be brought to market every year by fishermen (Berkes et al., 1979).

Citing a report from 1911, Kühn (1930) reports that seal meat was sold frequently on Comisa in the Adriatic, while a similar trade was recorded at the market of Bejara, Algeria in 1974 (Sergeant et al., 1979).

Even more recently, a survey of monk seal mortality in Greece, published in 1991, revealed that one pup had been killed with a spear gun by a snorkelling tourist and then eaten (Cebrian & Vlachoutsikou, 1991; Johnson & Lavigne, 1999b).

Superstitions

While folklore could paint the species in various hues ranging from mermaid to sea devil (see Human Attitudes, above), other beliefs and superstitions were directly related to the perceived usefulness of the monk seal's hide and other body parts in magic and sorcery.

Of superstitions recorded in the ancient world, many continued to haunt the Middle Ages and Renaissance. Pliny the Elder may have reported in the 1st century A.D. that seal skins "even when flayed from the body, are said to retain a sense of the tides,"[44] and yet according to Rondelet, Gesner, and other scholars of the age, Renaissance-era seafarers were utilising the sea-calf's pelt in much the same way, as a kind of barometer.

"Its hair is reputed to be of such a wondrous nature," writes Gesner, "that the skins or belts are worn by mariners. When thunderstorms, tempests and other inclement weather is nigh, the hair shall rise and bristle, but when it turns still and mild, it shall lay down smoothly" (Gesner, 1558).

To Isidorus of Seville (*ca.* 560-636 A.D.), these were near-miraculous properties, for even though the seal is dead and skinned, the hairs continue to "behave by some natural instinct in accordance with the mood of the sea…" (Gesner, 1558). The same qualities were reported by Albertus Magnus in the 13th century (Albertus Magnus, 1999).

Rondelet writes that he has "frequently observed" the phenomenon with his own eyes. "Changes of the wind are indicated by the hide of dead seals: for when the South wind arises the hair bristles and stands up, but in the state of a North wind they sink down."

[44] Natural History, IX; 42.

Moreover, "the hairs always bristle at the ebb tide of the sea," qualities that have inspired men to make "useful belts" of the seal "for many years" (Rondelet, 1554).

Even Pliny was sceptical of the seal skin's miraculous qualities, claims Gesner (probably inaccurately – see Johnson & Lavigne, 1999a). As if to dispel such doubts, he cites a contemporary report from the New World where colonists were already hunting the Caribbean monk seal in the "Indian Sea". According to the Italian physician and mathematician Hieronymus Cardanus (1501-1576), he writes, the same phenomenon "was experienced a short time ago by a number of trustworthy men on the island of Hispaniola" (Gesner, 1558, 1563).

Seal skin had also not lost its edge as a shield against hail and lightning storms. Quoting the Roman farmer Palladius (4th century A.D.), Gesner reports that crops will remain "well-secured from hail and other pests" if a seal hide "is dragged around a field or vineyard." For seafarers, too, the skin promised similar benefits. "Because of the hide's curious power against thunder, lightning and hail," adds Gesner, "sailors protect their ships by covering the highest parts of the mast with it" (Gesner, 1558, 1563; see also Johnson & Lavigne, 1999a).

While the Renaissance obsession for all things classical sometimes tends to blur the passage of time, making it difficult to ascertain whether customs and superstitions once evident in Greece or Rome continued to survive in later centuries, hints were offered on occasion. Gesner's discussion of the marine calf's immunity from lightning strikes is a case in point. The fact that "belts made of its skin are commonly seen," he writes, confirms that mortals continue to have faith in its powers (Gesner, 1558).

Gesner also quotes Kyranides liberally, an obscure source of uncertain age and identity whose work, nevertheless, is strikingly reminiscent of the convoluted superstitions, sorcery and macabre medical lore of the Magian priesthood of Persia (Johnson & Lavigne, 1999a; Pauly-Wissowa, 1894). According to Kyranides, "A [seal] skin should be placed somewhere in the house or boat or be worn lest any evil should befall, and it will avert lightning, tempests, dangers, magic, demons, wild beasts, thieves and nocturnal incursions… " (Gesner, 1558).

With the same irrepressible optimism that often characterises such ancient magical lore, Kyranides goes on to assure his gullible followers that various body parts of the seal will attract lovers and vanquish enemies: "The right eye put into the skin of a deer will make one loveable, fortunate and powerful. Similarly the bearing of its heart and rennet averts every difficulty and brings every good. If also you were to carry its whiskers, I emphasise large and sharp ones, wrapped in the skin of a deer, and were to fall into the company of enemies, all would greet you as friends. Its tongue worn beneath your shoes brings victory. If anyone takes the heart of a seal, the tip of its tongue, the whiskers of its nose, either eye and its rennet and binds these things into the skin of a deer or of a seal and then wears it, he will vanquish everyone on land and sea. From him will flee all infirmity and suffering and misfortune of behaviour and any demonical wild beast, and he will be blessed, happy and beloved. If he wears its rennet he will conquer all adversaries by virtue of his judgement. Its whiskers worn together with its heart confer fortune and great favour."

While quoting his source at length, Gesner nevertheless pours scorn on Kyranides and his spells and potions, noting that "he is a liar who reports so many absurdities"[45] (Gesner, 1558).

That the sea calf may have been seen by some as a magic force or its skin as an amulet against calamity is also hinted at by Gesner in another passage. Despite the obscurity often inherent to such superstitions, Gesner appears to imply that the wearing of seal skin symbolised astuteness of character: "Those who wish to mark a man in future who manages his affairs and arranges help against dangers so that he is safe against maximum misfortune, depict him clothed in seal skin" (Gesner, 1558).

There were also more down-to-earth superstitions involving the monk seal. Although providing no indication of period, Jacob (1979) reports the Madeiran custom that fishing families would place a seal-knife in the crib of their firstborn, in the hope that the child would grow up to become an accomplished seal hunter.

In what appears to be a variant of the farmer's eternal battle of wills with the crow – in which the black feathered bodies are nailed to fences as warnings to others – a 1974 report from Algeria records that a seal from the Grotte de Novi colony was shot and "its carcass placed in front of the cave in an effort to frighten away the other seals" (Anon., 1975).

Medicinal uses

The intensity with which monk seals were hunted for their perceived medicinal properties in antiquity is well documented, and – coupled with other forms of exploitation – almost certainly led to a significant population decline and the eradication of most large herds by the reign of Emperor Diocletian in 300 A.D. (Johnson & Lavigne, 1999a).

In reciting the extensive Roman (and to a lesser extent, Greek) medicinal uses for seal fat, oil, rennet and gall, Rondelet appears to imply – if only by omission and use of the past tense – that such exploitation was no longer seen in his own day (Rondelet, 1554).

Gesner echoes the observation, though apparently without any corroboration from other sources. At the same time – and in a contradictory vein so common to the natural histories of the age – he also presents a comprehensive catalogue of seal-based medicines, potions and treatments, quite as if they were still in contemporary use (Gesner, 1558, 1563). Suggesting that his earlier implication had been no more than a slip of the quill, even Rondelet notes that "the seal gall bladder is valuable for all kinds of things," and that it "is useful to have shoes made out of it [the seal] for gout-prone joints." Aldrovandi, too, reports that "the sea-calf offers several parts of its body, both internal and external, as useful in medicine, the flesh of course, the blood and fat, the flippers, the hide and the bile." Aldrovandi, however, appears to have relied extensively upon the Corollarium Gesner, the Swiss physician's compendium of medical lore (Aldrovandi, 1638).

[45] Possibly this was also a swipe at Aldrovandi who, in popularising the Kyranides texts, also afforded them some measure of credibility (Pauly-Wissowa, 1894).

Of the numerous prescriptions logged by Gesner, most were lifted, almost verbatim, from Aristotle, Theophrastus, Pliny the Elder, and other writers of the ancient world. Gesner diligently records, for example, the seal's alleged cure for epilepsy – with pups being targeted for their 'rennet' or mother's milk – and the insomnia-healing properties of the animal's right fore-flipper (Johnson & Lavigne, 1999a). And yet within the same compendium, the Swiss encyclopaedist also quotes anonymous sources or works from later authors, such as Marcellus Empiricus (4-5th century A.D.), Isidorus of Seville (560-636 A.D.), and the Persian physician and neo-Platonist philosopher Avicenna (980-1037).

Gesner cites Marcellus Empiricus as saying that the fat of the seal, smeared on the affected area, "greatly helps eruptions on the chin." He quotes Avicenna as reporting that "its flesh counters epilepsy and suffocation of the womb," an apparent adaptation of Aristotle's prescriptions which called for fumigation using seal oil (Johnson & Lavigne, 1999a). Echoing Pliny, Isidorus – in an allusion to the infamously sleepy habits of the monk seal – attests to the "soporific power in the right flipper… if it is laid beneath someone's head."

Appealing to more gruesome tastes, Gesner also quotes Kyranides extensively. Despite Gesner's cynicism towards Kyranides, Aldrovandi is reputed to have popularised the tracts and even to have lent them credibility (Pauly-Wissowa, 1894).

According to Kyranides, reports Gesner, the fat of the marine calf "heals all pain and swelling of the joints," while its "cremated head mixed with cedar oil cures baldness and all ills of the head."

In addition, claimed Kyranides, "its flesh when frequently eaten and its dried blood when secretly drunk in wine cures all epilepsy, manias and all pains." Sprinkled dry over a drink, he claims, the animal's "liver, lungs and spleen" will "cure those same ills and all pains."

Nor were these the sum total of the sea calf's medicinal wonders, according to Kyranides. "Drinking the brain," he claims, "expels demons and cures mental illnesses"; seal rennet drunk every four days "helps [in cases of lethargy] and similarly drunk cures back strain"; the animal's "gall mixed with honey cures all eye troubles"; and fumigation with its bones (a contrast to Aristotle's use of seal oil) "speeds birth" (Gesner, 1558).

In his compendium, Gesner also lists many unfamiliar prescriptions without attribution (Gesner, 1558). Rather than being derived from ancient, anonymous sources, it appears more likely that these were also later remedies or refinements to the seal-use manuals handed down from antiquity.

Indeed, it is known that other physicians not cited explicitly in Gesner continued to include seal-based remedies in their medical treatises in the Middle Ages.

In the 6th century, for example, Aetius Amidenus advised that if patients suffering from hydrophobia were wrapped in seal, bear and hyena skins, they would be swiftly brought to their senses.[46] A century later, Paulus of Aegina noted that, in accordance with earlier regimens advocated by Dioscorides and Galen, bowel ailments and dysen-

[46] *Iatricorum*, liber vi, 24.121.

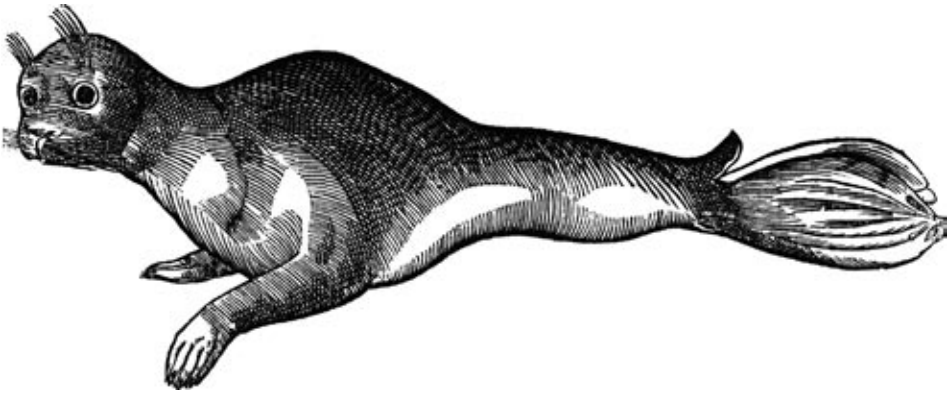

Fig. 22. Aldrovandi's *Vitulus marinus* (1638).

tery could be treated with seal rennet.[47] And the *Hippiatrica*, compiled under the reign of the Byzantine emperor Constantine Porphyrogenitus VII (912-959 A.D.), records the contemporary use of seal fat in the treatment of discharging wounds affecting horses' feet,[48,49] and malignant mange.[50]

Significantly, perhaps, Gesner's 16th century compendium ascribes curative properties to many more parts of the seal anatomy than those found in ancient medical texts, where the standard and most valued pharmaceutical constituents were oil, rennet and fur.

Indeed, Gesner states explicitly that remedies derived from the sea calf lung are superior to those obtained from the fat, while the liver, lungs and spleen excel compared to remedies that call for the eating of the animal's flesh (Gesner, 1558).

While such historical records can be taken as evidence for the continued use and refinement of seal-based therapies into the Middle Ages, paradoxically, they may also be indicative of population decline. Conceivably, an expanded list of useable by-products in the marketplace may suggest that Mediterranean seals were in much shorter supply in the Middle Ages than in antiquity and, as such, better use had to be made of their organs.

"The sea-calf's meat is eaten," writes Gesner, "and its dried blood drunk in wine. In the same way, its liver, lungs, spleen and the stomach of the young, including its blood, is praised for epilepsy, giddiness, strokes, frenzy and other illnesses of the brain."

While not explicitly divulging his sources, Gesner also assigns to specific diseases seal-based treatments that likewise appear to be adaptations and enhancements of those originally developed in antiquity. Referring to the seal's hallowed 'rennet'[51], Gesner says

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[47] *Epitomae medicae libri septem*, 7,3,16,167.

[48] *Hippiatrica Cantabrigensis*, 41,1,5.

[49] ibid., 80,23,8.

[50] *Hippiatrica Parisiana*, 306.2.

[51] For a definition and description of seal 'rennet', see Johnson & Lavigne 1999, p. 40.

that drinking an amount "the size of a pea" will drive away quartan ague,[52] diphtheria, angina, quinsy and croup. The odour of the burnt bones, he adds, in an apparent adaptation of Hippocrates' remedy, induces birth, while the seal's gall alleviates pains of every kind and also relieves watering of the eyes. In yet another apparent adaptation of medical prescriptions from antiquity, Gesner notes that the skin of the seal, girded around the torso, "is good for the kidneys and hips." The Swiss physician also echoes the ancient prescription that shoes made out of seal skin "drive away podagra."

Two other fragments of evidence support the hypothesis that seal-based remedies continued to play a role in medical lore during the Middle Ages and Renaissance.

One was the abiding popularity of Pliny's Natural History, which provided a cornucopia of seal-based remedies derived from sources as diverse as Aristotle and the Magian priesthood. During the Middle Ages and the European Renaissance, this encyclopaedia of ancient knowledge became one of the most widely consulted of all books from antiquity, its popularity second only to the Bible and Euclid's treatise on Greek mathematics (Scarborough, 1988; Johnson & Lavigne, 1999a).

Even more compelling, perhaps, is the enduring nature of beliefs rooted in folklore. Indeed, it appears unlikely that seal-based therapies were not seen during the age of Rondelet, Gesner and Aldrovandi, when monk seal oil and fur was still being used for veterinary and medical purposes in Greece and Turkey at the end of the twentieth century (when modern alternatives were readily available, and at a time when the species was already severely depleted in many areas).

Kiraç and Veryeri (1996) report the continued use of seal oil and fur among older inhabitants of the Bodrum peninsula, on Turkey's Aegean coast, to treat what is known locally as "foça[53] sickness". This unidentified condition, whose symptoms include swelling of the face, ears and mouth, sometimes with inflamed skin and facial boils, is treated through fumigation (clipped hair being burned in a cup) and, if available, the topical application of oil.

The seal-based treatment for rheumatism also survived into the 20th century. In an interview conducted by Turkish researcher Cem O. Kiraç in 2001, a former Black Sea seal catcher, Melahat Ural, revealed that: "we knew very well that *çarik* from sea-bear skin… was very good for rheumatism" (Cem Kiraç *pers. comm.*, 2001).

In the late 1920s in Algeria, Gavard (1927) also reported the lucrative sale of seal oil and fur as a rheumatism remedy.

In much the same way as prescribed in the medieval *Hippiatrica*, seal fat continued to be used in rudimentary veterinary care in Greece in the 1980s. Goat-herders on the Aegean island of Samothraki were quoted as praising the efficacy of seal fat in treating festering open wounds in their animals (Ronald, 1980).

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[52] Malarial fever occurring every third day.

[53] The seal is often referred to as 'foça' in this area, rather than the commonly used term, 'fok'.

Live capture and captivity

Other ancient rites involving the monk seal also persisted. While the great spectacle of monk seals being pitted against bears in the circus arena may have perished with the fall of Rome (Johnson & Lavigne, 1999a), the animals were still being captured for travelling shows and zoological gardens well into the 20th century.

Gesner suggests that the seals were still making circus appearances in his day and age. Quoting the historian and theologian Raphael Volaterranus of Italy (1451-1522), he reports that the sea calves were "recently shown in Rome in public performances" (Gesner, 1558, 1563).

Gesner's contemporary, Ulisse Aldrovandi, made his first acquaintance with the Mediterranean monk seal in a roving menagerie in Bologna, and offers a brief description of the encounter in his 1638 work, *De piscibus* (Aldrovandi, 1638; Hermann, 1779; Brusina, 1889). His observations, however, probably shed more light on human attitudes towards the seal than on the species itself:

> "In this town I saw a marine calf with an itinerant show by which it had been dragged throughout the whole of Europe, trained at the name of its master Christianus to give I know not what voice as if afflicted by joy, but on the contrary, with any other name, be it Turk or heretic, to remain quite silent…"

Rondelet, too, appears to have gleaned much of his information on monk seals from captured specimens, including a seal he describes as living in the company of monks on the Iles de Lérins, near Cannes (Rondelet, 1554; Cheylan, 1974; Sergeant *et al*., 1979).

Italian Benedictine monk, Mauro Orbini, describes a sea calf being "preserved alive for several months in straw and conveyed in a box around many places in Italy" in 1599 (Brusina, 1889).

The historical record shows that the supply of captive monk seals for circuses and travelling shows became something of a cottage industry in the 1700-1800s. News sheets and handbills proclaiming the appearance of a "talking fish," "merman" or "sea monster" were distributed far and wide as Mediterranean seals were put on show in towns and cities as far north as Munich and London (Faust, Barthelmess & Stopp, 1999; Gray, 1864).

For fishers who were hired to trap the seals in their nets, the trade represented a double stroke of good fortune, lining their pockets with gold coin while simultaneously ridding them of a detested pest (see Fig. 19). For the Adriatic seal in particular, however, it spelled disaster. Never having recovered from the age of intensive hunting, the three-pronged assault of capture, pest-control and loss of habitat was propelling the already rare Adriatic population to the point of no return by the late 1700s (Brusina, 1889).

Scattered reports speak of Adriatic seals entertaining the crowds in several European countries but, if only because official records were non-existent, these almost certainly represent only the tip of the iceberg. Dalmatian monk seals were taken to France and Switzerland in 1778, to Turin in 1809, carted around the heartlands of Germany in 1815, and were also displayed to the public for a fee in Dubrovnik between 1871 and 1876 (Hermann,

1779; Brusina, 1889). Another seal, of uncertain origin, yet in all likelihood also from the Adriatic, was put on display at Charing Cross, London, in February 1742 or 1743, which the prominent French naturalist Count Georges-Louis Leclerc de Buffon (1707-1788) identified as his *petit phoque*, "the seal of the ancients" (Buffon, 1765). Describing his encounter with a Mediterranean seal in a travelling show in Paris in 1778, Buffon notes that the animals had been exhibited in France and Germany since 1760, and implies that captures continued, particularly at Quarnero in the Adriatic (Buffon, 1782).

Quoting the observations of a medical doctor from the faculty of Montpellier, Buffon also reports that a female seal appeared in a travelling show in Nîmes in the autumn of 1777. The animal was reputedly very obedient to the voice of its master. It extinguished a candle with the breath of its nostrils, lived on eels which it ate in the water of its tub, but died in Nîmes of a sickness resembling glanders – a contagious, usually fatal disease of equine species, but also communicable to other mammals, including human beings (Buffon, 1782).

In time-honoured fashion, most monk seals destined for public display appear to have been immature animals. Possibly, they were easier to capture because of their keen curiosity, and better able to withstand the rigours of captivity (Brusina, 1889). "This species is so easy to train and to keep," said one 19th century writer, evidently with scant concern for the premature deaths that plagued these circus spectacles, "that it very often makes the journey through Europe." Though the author, K. E. von Baer, conjures up the image of animal stars touring Europe of their own volition, he provides a credible and comprehensive inventory of the numerous shows in which the animals appeared. Also listing the repertoire of tricks they performed – the barking upon command, the 'roll-over' and the flipper 'handshake' – he asserts that the seals could be trained as easily as performing dogs (Baer, 1838; Faust, Barthelmess & Stopp, 1999; Mohr, 1952).

Although almost every naturalist since Pliny has remarked upon the intelligence and docility of the monk seals they found in captivity, this quality apparently did little to help them survive in human hands. Indeed, by most accounts, those taken into captivity rarely lived for more than a few weeks or months, thereby driving on the relentless cycle of supply and demand. To a certain extent, this rash of premature deaths can partly be attributed to the abominable conditions in which the animals were held, which rendered them particularly susceptible to disease. Equally responsible were the owners and keepers, whose obsession to maximise profits, coupled with a profound ignorance of the biological needs of the species, undoubtedly sent many to an early grave.

Gradually, showmen came to realise that they had a vested interest in keeping their star attractions alive for as long as possible. Gaining experience, writes the Count Buffon, "keepers have found the means to cure them of certain illnesses which they are vulnerable to in their state of unease in captivity, and which they probably do not experience in liberty. For example, when they refuse to eat, their keepers pull them out of the water, force them to take milk laced with theriac,[54] keep them warm by covering them with a blanket, and continue the treatment until the animal has regained its appetite." In the five

[54] A panacea containing opium.

Fig. 23. A handbill (detail) advertising the arrival of a travelling show, featuring a monk seal captured near Livorno on 5 May 1814. According to Faust, Barthelmess and Stopp (1999), after 1800, live seals were often exhibited, and such handbills were typical of the period. Courtesy Klaus Barthelmess, from Faust, Barthelmess & Stopp, 1999.

or six days following their capture, he adds, these seals often refuse all food offered to them. As such, fishers who catch the animals "insist that one would see them perish from exhaustion if not forced to swallow a dose of theriac with milk" (Buffon, 1782).

Rudimentary hygiene also played a role in keeping the showmen's investments alive, as Buffon discovered when interviewing the keeper of the Paris seal in 1779. The animal, the keeper assured him, could live for days, and even for more than a month without entering the water, provided that it was washed every evening with clean water. If thirsty, it should be permitted to drink only clean salty water, because if it drank from the murky contents of the pool – no doubt contaminated with fish remains and faeces – "it did not feel well" (Buffon, 1782).

By the 19th century, Mediterranean monk seals were encountering another form of lethal curiosity, this time in the shape of the considerably more respectable zoological fraternity.

Among the dusty records of the Zoological Society of London, almost lost amid the thousands of other exotic species that the Menagerie avidly acquired from every corner of the globe, are records of four ill-fated monk seals.

A report on the additions to the Society's Menagerie during the month of May 1882, states that a Mediterranean seal was presented to that prestigious institution "by M. Yates Brown, Esq., Her Britannic Majesty's Consul at Genoa." The creature, it continues, "had

unfortunately not long survived its arrival." This was a somewhat euphemistic way of saying that the seal had expired on its very first day at the Menagerie (Flower, 1882; King, 1956). Hand-written daily logs, known as 'Occurrences at the Gardens', duly report the arrival of the seal from Genoa, and even the number of public admissions at a shilling each, but curiously, no mention is made of the animal's swift demise (Z.S.L, 1882).

A replacement monk seal was purchased on April 26, 1884 from the Zoological Gardens of the Bois de Boulogne, Paris[55] (Z.S.L., 1885). The transaction is recorded in the governing Council's report to the 1885 Annual General Meeting, and states that the Menagerie had acquired "A fine example of the Mediterranean Seal (*Monachus albiventer*), an animal now growing scarce and difficult to procure…" (Z.S.L., 1885). Despite a search of the Society's Proceedings, Reports, Lists and Superintendent's day-books, no trace could be found of the animal's fate. In all likelihood it, too, perished within a few days or weeks of its arrival.

Evidently with few qualms about contributing to its scarcity, the Society obtained another monk seal in 1894, this one from Madeira, which managed to survive for three and a half months (Anon., 1894 ; Z.S.L., 1895; King, 1956). Last but not least, yet another monk seal was acquired from Madeira on 9 April 1910, and survived for just four months (Anon., 1910a; Z.S.L., 1911; King, 1956).

Madeiran fishers were also supplying seals to other zoos keen to acquire the rarest species for their collections. Illustrating how the zoological fraternity was already becoming quite accomplished in the art of public relations, a peppy news item from the Berlin Gardens, dated September 1910, announces the new arrival of a monk seal, "a species which only rarely reaches us alive." Camouflaged by the fanfare are the faintest of hints that the animal was already ailing. Begging the indulgence of the visitor, the item continues: "The valuable stranger, which was only recently caught near Madeira, has the very stately length of 2.40m, but is still somewhat fussy about the fish offered to it, and therefore does not provide the exciting spectacle at feeding time as offered by the always-hungry harbour seals and the sea lion" (Anon., 1910b). Another monk seal was dispatched to the Marburg zoo in the early 20th century. Apparently captured off Morocco, where the species was known as *Tasmaniach*, it was described as "extremely strong and flawless" by a visiting curator from the Sarajevo Museum of Natural History (Reiser, 1912).

Gavard (1927) reports that a seal sold to a "consortium of Spaniards" in Algeria was put on display as a sea 'monster'. The animal is reputed to have netted its new owners a healthy profit even several days after its death.

Live captures for circuses and travelling shows also occurred in Spain. In some areas of the country, the seal was even known colloquially as 'foca parlante' or the 'speaking seal' in recognition of the human-like voice it uttered when responding to its trainer's commands (Teresa Pastor *pers. comm.*, 2000).

Fishermen in Sardinia also continued to capture seals until the 1950s (Johnson, 1998a). In 1951, *The Times* of London reported that a monk seal pup had caused something of a splash in Rome's famous Piazza di Trevi fountain (Anon. 1951):

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[55] *Jardin Zoologique d'Acclimatation du Bois de Boulogne.*

> "Passers-by in the Piazza di Trevi, the square whose main feature is the great fountain into whose waters every visitor who wishes to return to Rome must throw a coin, were astonished this morning to see a seal swimming in the basin. The animal was the property of two Roman journalists, who had brought it back from Sardinia and who apparently thought it suitable that the seal should have a swim in such famous surroundings. A literal-minded policeman fined them for contravening the by-law which prohibits the throwing of anything but money into the fountain, and they and the seal departed in a motor-car."

In another incident in 1953, a juvenile seal was captured for a German zoo on the island of Tavolara, Sardinia, but reportedly died as buyers and sellers engaged in protracted haggling over the price (Egidio Trainito *pers. comm.*, 1999).

In Turkey, monk seals continued to be captured and exhibited in city zoos and open air fairs up until the early 1970s (Mursaloglu, 1980; 1984). As a result of their investigation of seal hunting in the Black Sea (including interviews with surviving 'sea-bearers,' as the catchers were known locally) Kiraç and Savas (1996) were able to shed further light on the trade, providing details of capture methods and also some idea of the numbers of individuals that might have been taken by each crew (Fig. 24).

Describing capture methods practised by the bearers, Kiraç and Savas write:

> "Seal trapping was generally practised after midnight by 3-4 persons under the guidance of an experienced bearer. They went in small fishing boats to the seal caves and, approaching a cave carefully, entered it by rowing to avoid disturbing the seals inside the cave. When the bearers reach the beach inside the cave in a completely dark environment, they first try to recognise the existence of seal(s) by their sounds. Sleeping seals are said to deliver a deep breathing sound during inhalation followed by clear and strong whistling noise during exhalation which is easily audible inside the cave. If the seal(s) realise(s) there is any danger, it utters a sudden, deep and short 'buhh' alarm call. When the bearers recognise a seal, they bring the boat to the beach, fire the lanterns, and one or two persons step on to the beach. If there is more than one seal, the bearers usually catch the younger or smaller seals because of the relative ease of capture. When the lanterns light, the seal lying on the beach tries to get to the sea: it moves towards the sea and approaches the boat which is brought sideways to the shore. The seal is then easily persuaded to enter the boat of its own accord or is caught by the hind flippers and carefully thrown into the boat. In some cases, especially if the specimen is big, nets are also used to catch and transfer the seals into the boat. Once the seal is placed into the boat, its head and body are covered with a piece of cloth so that it does not notice its environs and so does not move at all (Kiraç & Savas, 1996).

One bearer, 64-year old Sükrü Aydin, reported that he and his crew had caught at least 21 monk seals between 1948 and 1973. "The majority of the trapped seals were pups or

Fig. 24. Former ‘sea-bearers’ on the Black Sea, interviewed by Cem O. Kiraç and Yalçin Savas. Photo: Cem O. Kiraç.

Fig. 25. A Black Sea monk seal in Ankara Zoo, circa 1962. Photo: Archive SAD-AFAG.

juveniles," write Kiraç and Savas, "because of the relative ease with which they could be caught. Living seals were sold to order, to fairs, zoos and showmen." The trade appears to have petered out with the dramatic decline of the species in the Black Sea. Although a telegram from Gülhane Zoo in Ankara was received in 1973, ordering a male and female specimen, Aydin reported that he had been unable to locate or capture a suitable female (Kiraç & Savas, 1996; Kiraç, 2001).

Ostensibly for the advancement of scientific knowledge, monk seals continued to be captured for various zoos and aquariums across Europe during the 20th century. To date, there has been no serious attempt to gather, collate and analyse such records, despite the valuable information previously collected by Rigas and Ronald (1985).

Of the 34 individuals cited in the publication – quite possibly the tip of the iceberg given the opacity of official record keeping where such animal transactions are concerned – the vast majority survived for no more than a few weeks or months in captivity (Johnson & Lavigne, 1994).

As reflected in the historical records presented earlier in this section, including the testimony of former seal catchers, most animals captured for display were juveniles, further compromising the potential recovery of dwindling populations.

Museum supply

On occasion, in a novel and macabre twist to the notion of sustainable utilisation of species, performing seals would continue to make public appearances even after their premature demise in captivity, their shrewd owners selling their carcasses on to museums for mounting, taxidermy, and display.

Although arguably too limited in scope to be described as a trade per se, the supply of monk seals to European and American museums nevertheless played a historical role in the exploitation of the species (Gray, 1854; Brusina, 1889; Zupanovic, 1966). Regrettably, acquisition records are far from being comprehensive or reliable, particularly where smaller museums are concerned. However, scattered throughout monk seal scientific literature are references to monk seal acquisitions by museums in various countries, including Austria, Bulgaria, Croatia, France, Germany, Greece, Italy, Monaco, Norway, the Netherlands, Portugal, Russia, Senegal, Turkey, the United Kingdom and the United States. In some cases, monk seal exhibits were acquired opportunistically, as a result of an animal's death in captivity or its accidental entrapment in fishing nets. On other occasions, the acquisitions were carefully planned and executed (Baudouin-Bodin, Duguy & van Bree, 1975; Peter van Bree *pers. comm.*, 2003; Brusina, 1889; Calinescu, 1936; Caspers, 1950; Dathe, 1934; Marchessaux & Duguy, 1977; Ronald, 1977; Wijngaarden, 1962; Zupanovic, 1966).

Studying the numerous reports of monk seals captured, killed and shot at by hunters, Brusina identifies the Dubrovnik region as the species' favourite haunt in the Adriatic during the late 1800s. Several animals were captured every year in the area[56] and Brusina,

[56] *Dalmatien in seinen verschiedenen Beziehungen dargestellt* by F. Petter. First Edition, Gotha, 1857.

quoting a friend in the Adriatic city, reports that when one of these performing seals abruptly perished, its skin was preserved in the Dubrovnik museum. Stuffed specimens also found their way into the museum's display cases, including three animals that had been shot by hunters in 1878[57] (Brusina, 1889).

Again, it is in the historical record, in the words penned by contemporary sources, that we find a true reflection of human attitudes towards the monk seal and the natural world at large.

Brusina, for example, records the decline of the monk seal with an air of detachment, and with little obvious lament for this disappearing species. In fact, he goes on to exhort his readers to provide a specimen for the national zoological museum, where "this species is not yet represented." He adds: "We ought to have at least one skeleton and one stuffed example. Whoever provides one for us will achieve fame for himself and his people" (Brusina, 1889).

The National Museum of Bosnia-Herzegovina in Sarajevo proved rather more adept at collecting seals, although its curator, Othmar Reiser, tells us that this was no easy task. The seal's numbers, he explains, had declined markedly during previous decades, in no small measure due to numerous captures for public display. Indeed, he laments, despite placing numerous orders, the Court Museum in Vienna had received only one very young specimen during the last decade. The Museum was thus obliged to travel far afield in its search for specimens and, in 1891, even dispatched an expedition to the Bulgarian Black Sea to collect specimens (Reiser, 1912).

Unfortunately, he adds, there can be no doubt about the scarcity of the seal in Dalmatian waters. A "trustworthy hunter" in Sarajevo had assured Reiser that, despite sighting seals several times on the coast near Zelenika, he had never been lucky enough to shoot one. It was therefore with great and understandable delight, writes the curator, that the Museum greeted the arrival of a splendid monk seal specimen on the 29th October 1906. Killed at Fort Opus, the animal was described as a "very old female, which met its death by a shotgun pellet that was seemingly fired at close range, penetrating the skull and entering the brain." Sold to the Museum "at a very agreeable price" by the fisheries association in Opus, the kill had obviously been something of a fluke. Out stalking waterfowl, a local hunter had stumbled across the seal in a shallow lagoon at the mouth of the river Narenta[58] and, probably as shocked as his victim, had peppered it with shot.

Having contributed to the demise of the species, like the curators of so many other museums Reiser then waxes lyrical in justifying the need for a stuffed and mounted specimen: "May these few lines help direct the attention of the noble huntsmen of Austria-Hungary towards this highly interesting inhabitant of the much praised shores of our Adriatic Sea… so that by gaining knowledge of the species we may prevent its imminent extermination" (Reiser, 1912).

In another episode, d'Albertis (1877) offers a rare, firsthand account of a naturalist's seal-hunt at the islet of 'Gallitone' (Galite in the Tunisian archipelago of the same name)

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[57] Upon dissection, one of these three seals was found to have been pregnant.

[58] Now known as Neretva.

Fig. 26. D'Albertis and his crew confronting a female monk seal in the Egyptian Grotto in 1876.

in 1876. The seal killed, an adult female, was later delivered as a specimen of *Pelagius monachus* to the taxidermist of the Civic Museum of Genoa.

During an unsuccessful hunt three days before the kill, d'Albertis even expresses his misgivings about taking the life of a seal: "When I levelled my gun at the animal," he writes, "I experienced a disagreeable impression, for in those eyes of the seal, large and full of life, I seemed to meet a human gaze. Who knows if the Sirens of antiquity were not seals?"

Such doubts, however, evidently did little to discourage further attempts.

In a small dinghy, explains d'Albertis, he, the "Commissar" and a crew member of the cutter Violante, stealthily entered the islet's "Egyptian Grotto":

> "We were already on the point of touching the shore and I was examining with my gaze every most remote corner of it when Giusti said to me 'Let's get out to take a better look.' 'Quiet! The seal is there…" I replied to him. In fact between the large stones lying there, there was an oblong, greyish body that had already for a while attracted my attention. It was motionless and had all the appearance of a large, oval stone; but observing it attentively I could already discern the half-shut eyes, the nostrils, the whiskers, the mouth, in sum the head of a large grey seal. To make my companions understand where it was required some time. I, in the meantime could have opened fire, but taking advantage of the sleep of the animal that was some distance removed from the water, I succeeded in arranging matters in such a way as to make certain of our prey. I told the Commissar to aim at

the animal's head and ordered the sailor to hold himself ready with the harpoon. The seal continued to sleep… For my part I pointed my rifle at the amphibian's trunk and shouted: 'Fire!' Our two shots reverberated around the deep cave; for an instant the smoke concealed from us their effect, but shortly after we saw the animal again raised up on its hind legs; its eyes glowed in the half-darkness like two lighted coals; the mouth was bloody and wide open. It seemed to writhe in pain without seeking refuge in its own element [Fig. 26]. I aimed my second barrel but the shot misfired. The seal, falling back on itself, then began to drag itself painfully towards the sea, but the Commissar, having recharged in the meanwhile, fired a third shot into its back. 'The harpoon!' I then shouted, seeing that the animal was diving, but the instrument wasn't ready. Meanwhile the fleeing victim (almost on the surface of the water) was approaching the boat. At that point I seized the dagger of the carbine and thrust it with as much force as I could muster into the body of the amphibian. At the second blow, its body remained inert beneath the point of the dagger.'"

Not without confusion and the danger of capsizing, he continues, the men proceeded to secure their slippery prey to the small dinghy. Their mission successfully accomplished, the men returned to the cutter, where they proceeded to inspect the animal's wounds and to prepare for its preservation.

"Everyone can imagine," writes d'Albertis, "the joy we experienced at the unexpected outcome of our hunt. When we came outside and saw in the open our enormous prey, our joy redoubled… My thoughts flew at once to Genoa, regretting that I did not have at my disposal immediately a telegraph to impart the glad tidings to our friends of the Civic Museum."

Prof. Antonio Carruccio (1893) also reports several monk seals being captured and killed in Sardinia, whose remains were later stuffed and mounted for museums in Cagliari and Rome.

Museums further afield were also avid collectors of monk seals. "The Trustees of the British Museum," declares an 1864 inventory of that prestigious institution, "purchased the dead body of a Seal which had been exhibited in London as 'the Talking Fish.' The Proprietor, an Italian, at first said that it was from the coast of South America, but afterwards admitted that it was from one of the ports on the north side of the Mediterranean." The Museum had also acquired young and adult specimens from Deserta Grande island, off Madeira, and a comparison of the skulls had at last demonstrated that the Madeiran seal, christened *Heliophoca atlantica* in 1854, and the *Phoca albiventer* of the Mediterranean, were of the same species (see Science in Captivity, page 68). Fellow of the Royal Society, Dr. John Edward Gray, described the new genus and seal species from the skin of a juvenile and the skull and hide of an adult, procured for him "after considerable trouble" by a Mr. MacAndrew, a British expatriate residing on Madeira. "Both the specimens in the Museum," writes Gray, "came from the same cave in the Deserta Grande Island" (Gray, 1854, 1864).

The first specimens to cross the Atlantic were acquired by the American Museum of Natural History in New York in 1926. The institution's distinguished journal buoyantly announces the consignment of "skins and entire skeletons of three Mediterranean seals, comprising an old male 8 feet 6 inches (2.62m) long, an adult female and a very young cub." This time, however, the Museum did not rely on local fishers to supply its needs but, in the time-honoured tradition of zoology's explorer-naturalists, dispatched its own expedition to the seal's "haunts among the sea caves of the Desertas Islands." While a multitude of other species were diligently collected on the islets of the Madeiran archipelago, "the most interesting experience" was "the penetration of the sea caves on Deserta Grande and the subsequent capture, with aid of several skilled Portuguese cragsmen, of a family of the desired sea mammals" (Anon., 1926).

Finally, there is also the case of the Oceanographic Museum of Monaco, which acquired a mother and pup in 1947. Despite their frozen postures behind the smudged glass cabinet displays, and the somewhat moth-eaten state of their fur, the two seals actually tell their own eloquent and peculiar story about human attitudes.

It was in September of that year that His Serene Highness Prince Rainier III and his hunting party ventured into a narrow cave in Corsica, and encountered the large (allegedly 3.5m) pregnant female sleeping on a rocky beach. Woken by the advancing men, we are told, the seal made a threatening movement, obliging His Highness to pump two bullets into the animal "in self-defence" (Troitzky, 1953; Johnson, 1998b).

Three hours later, after recovering the body and bringing it aboard ship, a caesarean section was performed to remove a full-term foetus. The pup, which may have been only

Fig. 27. The Corsican monk seal, killed in "self-defense" by Prince Rainier III in 1947.
Photo: Matthias Schnellmann

hours away from birth, was found to be still living, but in asphyxia. Prolonged attempts to resuscitate the animal proved in vain, and the two dead trophies were eventually consigned to the Oceanographic Museum. The snarling, ferocious beast that must have confronted Prince Rainier and his hunting friends was then preserved for posterity – a testament, perhaps, to the talents of the Royal Taxidermist (Fig. 27).

SCIENCE IN CAPTIVITY

Ironically, it was only through live capture that modern science became acquainted with the Mediterranean monk seal. While Aristotle saw herds of frolicking seals along the shores of Lesbos (Johnson & Lavigne, 1999a) in the 4th century BC, there is no evidence to suggest that those naturalists of the 18th and early 19th centuries who attempted scientific descriptions of the species ever observed a single living specimen in the wild.

Indeed, studies conducted by Johann Hermann (1779), Georges-Louis Leclerc de Buffon (1782) and François Cuvier (1813) were all conducted far from the sea – in travelling menageries playing to the crowds across Europe. Inevitably, it is here that the first modern myths and superstitions surrounding the seal and its behaviour began to creep into scientific literature.

It is in reviewing these records, however, that we also gain a further understanding of the prevailing and often ambivalent human attitudes towards the species – attitudes sometimes marked by cruelty or ignorance, sometimes by pity and compassion.

Hermann, the obscure German naturalist who christened the species *Monachus,* was born in the Alsace town of Barr in 1738. While little is known of his formative years, history records him as having accepted tenure at Strasbourg University at the age of 31. While teaching and conducting research, he also pursued his greatest personal ambition – an attempt to devise a credible alternative to the contemporary cataloguing of animal species under a linear, hierarchical structure. Though it was never destined to achieve the acceptance of his peers, his *Tabula affinitatum animalium* was considered intriguing in that it sought to arrange species in an inter-connecting network of groups.[59] As fate would have it, however, Hermann was destined to achieve fame, albeit of a relatively minor nature, for an entirely different accomplishment – the first modern scientific description of the Mediterranean seal (Hermann, 1779).

Hermann made his first acquaintance with the species at the end of October 1778, at a travelling show encamped in Strasbourg. It was here, amid a jumble of carts and tents, that he came across a lone male seal, held in a rectangular wooden crate. Owned by a troupe of Venetians, the little circus was touring the country with the seal as its star attraction. "Despite their many expenses," marvelled Hermann, "they have already earned with it, within the year, over ten thousand Livres."[60]

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[59] *Meyers Enzyklopädisches Lexikon*, 1974.

[60] A money of account formerly used in France and originally worth a pound of silver.

Fig. 28. Johann Hermann's Strasbourg seal, which he named *Phoca monachus*.

Though its owners firmly maintained that the animal was a *Phoca vitulina* or common seal, Hermann quickly recognised this inhabitant of the Mediterranean as a species unknown to contemporary science.

Equipped with pen and paper to record his discovery (Fig. 28), he set about examining the seal and questioning the animal's keeper. Evidently this was not the straightforward task he might have wished for, since Hermann complains on several occasions about the showman's dubious veracity.

"We are heading for Paris to show the seal to the King," announced the keeper, who was apparently dressed in red from head to foot. Whether this pronouncement was supposed to impress the German professor is not clear, but Hermann was convinced that he should persevere.

The seal, he was told, had been captured in the autumn of 1777 at Ossero in the northern reaches of the Dalmatian Sea. Known today as Osor, this small fishing village lies on the western shore of Cres,[61] on a spit of land that almost touches the islet of Losinj in the Gulf of Quarnero.

A second seal, netted at the same time, was being exhibited across Europe by an offshoot of the same troupe. "It is said to be about a foot shorter," writes Hermann, "only half the girth, and does not have the white patch on the belly." Though following a different itinerary, the show had passed through Strasbourg on 2 November on its way to Switzerland, its money-spinning curiosity held in a large wooden tub. This seal, the keeper was frequently apt to remind him, was a female, and Hermann expresses his regret in missing a unique opportunity to examine the animal. Although we will never know whether the keeper's claim was inspired by ignorance or mischief, it was quickly

[61] Formerly known as *Cherso*.

contradicted by one of the show's owners. Illustrating just how frustrating it must have been for Hermann to grapple with the bragging, imprecision and vagueness that coloured the Venetians' accounts, similar confusion reigned over the age of the Strasbourg seal. While the showmen claimed that the animal had grown vigorously in the year since its capture, the old fisher on Cherso who had landed the seal in his nets, apparently vowed that he had seen the same individual over many years, recognising it by its distinctive white belly patch.

"The blackish teeth, which seem to be worn, might perhaps make this plausible," laments Hermann. "But how shall I reconcile this with its strong growth of a foot in one year? One or the other seems to be wrong."

The seal was an important find for science and yet, in his report to the Berlin Society of the Friends of Nature Research,[62] Hermann was typically self-effacing. "For some time I was undecided whether I should write down my observations," he concedes, "since the animal has already been on show around Germany for a year. But then I concluded that it could do no harm if there were several descriptions and illustrations of such a beautiful and rare animal."

While the Venetian showmen had no inkling of the exceptional nature of their exhibit, they at least recognised it as a seal, which is more than could be said for the gullible public flocking to the show. They apparently regarded the animal as a bizarre marine curiosity or talking fish, a fact that obviously vexed the fastidious German naturalist:

> "On this occasion I was astonished, as I have been so many times before, about the impudence of certain people, and how they judge things that they do not understand. One of the spectators announced with great confidence that it is a Sea-pig, another that it is a tuna, and yet another that he had eaten of its flesh and that it tastes like salmon, and that one often catches them in rivers: probably he meant the sturgeon. But what astonished me the most, and probably annoyed me as well, was how so many people who presumably have eyes in their heads, were all speaking of the seal as a fish."

The keeper, too, had few qualms about subjecting the German professor to a torrent of circus show spiel, a verbal assault that might have tried the patience of a less reserved man.

"Nobody could coax its voice but its keeper," writes Hermann, "who insisted that the animal could speak and could repeat the words 'Papa' and 'Mama', which he duly rehearsed." Asking the seal whether it was hungry, or if it liked the fish offered to it, would elicit a harsh roar. The keeper would then claim that the seal was clearly barking 'yes' in response, though this expedient interpretation did not strike Hermann as particularly convincing.

Despite such imaginative inventions, Hermann realised that the seal was obviously very devoted to its keeper, looking round for him in his absence, and following him

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[62] *Berlinische Gesellschaft naturforschender Freunde.*

Fig. 29. Detail of a handbill distributed in Germany, advertising the arrival of a showman from Livorno, Italy, with his "Live Sea Lion" ca. early 1800s. Courtesy Klaus Barthelmess, from Faust, Barthelmess & Stopp, 1999.

whenever he appeared. Perhaps, muses Hermann, the keeper's red clothing encourages such behaviour.

Upon its master's command, the seal rolled over, proffered one fore flipper and then the other. On cue, it would seize with its jaws a baton held in the keeper's mouth. In another stunt, the showman appeared to put his fist in the animal's toothy maw. Though a feat sensational for the paying public, it was actually accomplished in a rather circumspect manner, with the keeper carefully placing his fist only under the seal's thick upper lip. There appeared to be good reason for such cautiousness, judging from the many scars which covered the man's hand – wounds presumably sustained during previous and more foolhardy attempts to practice this particular trick.

While the seal's voice was likened to that of a hoarse dog, the animal occasionally emitting a hound-like howl, there, the similarity ended. The animal obviously detested dogs, becoming so incensed that it would cry and foam, and would attempt to drive them off by gnashing its teeth.

Despite such lapses, notes Hermann, the seal was "very obedient and altogether very tame, allowing anyone to touch and stroke it." Most measurements could therefore be taken without difficulty. When the professor's measuring string was applied to its head, the creature became a little disgruntled, but turned more restless during examination of its belly and hind flippers, "where it could not see what was happening to it."

The seal was held in a wooden rectangular container, which was, "towards ten or eleven o'clock, filled with one to one and a half foot of water, wherein a good bowl full of salt was dissolved." The animal found it impossible to swim in such shallow water, he observes, and it would therefore attempt a kind of awkward crawl. The posture of the hind flippers while swimming thus proved particularly problematic for Hermann as he

endeavoured to sketch the animal, and this is reflected in his rather extravagant depiction of this part of the seal's anatomy (Fig. 28).

Though modern zoology was still in its infancy, Hermann was perceptive enough to realise that the animal's behaviour could be warped by confinement. "I cannot ascertain more of its behaviour than that which I observed in the captivity of the animal," he admits, adding that the free-ranging animals might well display other curious traits, or those of an entirely different nature. He then adds a caveat that would become all too familiar to the zoological fraternity. "If we were always to wait for such an opportunity," he writes, "where we could observe nothing but the purest, unaffected nature, then our knowledge would not have advanced very much."

While it may be unfair to characterise this statement as expedience masquerading as pragmatism, it must be said that neither Hermann nor his contemporaries made any obvious effort to study or observe the monk seal in the wild. The science of Zoology was dominated by universities, museums, zoological gardens, scientific associations and other prestigious bodies that grew up far from nature in the urban sprawl of the civilised world's great cities (Bowler, 1993). Scientific expeditions into the wild had less to do with non-intrusive *in situ* research than outright plunder, in which teams of naturalists set about trapping and killing animals for study and display. Both the Mediterranean and Caribbean monk seals were, in fact, to pay a particularly high and deadly price for such ruthless curiosity (Allen, 1890; Anon., 1926).

Despite the ritual justification that captive animals advanced the cause of scientific knowledge, all too often they also advanced errors and misconceptions, particularly where behaviour was concerned. A case in point is Hermann's portrayal of the seal as a light sleeper, belying the numerous accounts from antiquity which even satirised the species for its infamously soporific behaviour.

At night, recounts Hermann, the keeper drained the water and placed reed mats in the container, upon which the animal slept lying on its side. "Its sleep was very light," he observes, "the slightest whistle of its keeper, or a fly which landed on it, were enough to wake it. It slept for around five hours in one stretch and snored very loudly. When waking it yawned."

In a sense, the Mediterranean seal that Hermann stumbled upon in Strasbourg was also symbolic of the fate of the species, a fact that the German professor did not realise at the time. Here was a seal – already recognised as "rare" by Hermann – that had been captured for a travelling show, one of many destined to be carted around Europe and the coastal towns of the Adriatic, the Black Sea and the Turkish Aegean. And here was an animal which also bore the scars of its species' long history of persecution by Mediterranean hunters and fishers. Indeed, so numerous were the seal's scars and blemishes that Hermann complains that they even complicated his anatomical examinations. While deducing that some could reasonably be attributed to the manner in which seals often fight and battle amongst themselves, others clearly had more sinister causes. Among these old wounds, he writes, "the animal still carried a bullet in the head above the right eye, which one could feel clearly. These injuries were not inflicted when it was caught, but a long time before, as it was shot at several times."

Avidly gathering his information, Hermann paid special attention to the feeding of the seal, and was astute enough to realise that some aspects of what he was observing owed more to traditional circus mendacity than to the natural feeding habits of the species.

"It was nourished only with fish," he writes, "of which it is said to consume up to fourteen pounds [6.35 kg.] a day, which does not seem to be too much to me." One of the Venetian showmen, he adds, "in order to create an even higher estimation of the preciousness of the animal, announced to the spectators that it eats only eels, trout and other quality fish. And true, during the day, when the spectators specially paid extra, it received some eels or live carp of a mediocre size."

In contrast, during the morning feed, the seal was thrown whiting of a comparatively inferior quality, and of these, observes Hermann, most were dead, and scarcely more than four inches [10.16 cm] long. The seal, however, ate them with relish, snatching them out of the hands of its keeper or the paying public. Sometimes, fish were also thrown into a bucket of water, or into its shallow pool, where the seal caught them with great agility.

The animal, remarks Hermann, always took fish by the head, shook them vigorously in the water and then swallowed them whole. Often, it also eviscerated the fish before gulping them down. The seal was never observed to drink, posing something of a mystery to its fascinated guest. Relying on the keeper's less than reliable expertise, Hermann finally reasons that the animal must lap up a little water while snatching fish from the pool. In fact, seals, like other marine mammals, do not drink saltwater, but derive the liquids they require from the flesh of the fish they consume (King, 1983).

Hermann found some of the seal's feeding habits particularly puzzling. "It cannot eat outside the water," he declares. "Although its keeper later learned to feed it fish in a bucket of water, in the beginning, when it was carried dry in a special carriage, it was often left to fast for many days." To Hermann, this refusal to eat, which produced no obvious ill-effects despite a loss of fifty pounds [22.67 kg.] in weight on the journey, was astonishing. "If I can believe the people exhibiting the animal, then on one occasion for five days and on another for eight days, it received nothing to eat due to a lack of fish. Moreover, in the beginning, following its capture, it reportedly took no food for fourteen days due to its own chagrin."

But does this species consume anything except fish, he ponders? According to the keeper, meat was not given to it, since a similar animal, whose owner wanted to save money on feeding, died from the partaking of meat while on show in Montpellier.

Hermann is mystified by the keeper's insistence that the seal also feeds on a green-leafed seaweed in the wild.[63] "As far as I have seen," he sniffs, "it did not touch lettuce and endives which were thrown to it, but let them float on the water."

In drawing on the reports of the Renaissance naturalist Pierre Belon, and two of his contemporaries distinguished in the field of zoology, Hermann reveals just how little naturalists of the age knew of the biology and behaviour of marine mammals. "Buffon as well as Pernetty also say that seals eat herbs, and Belon[64] reports that they do damage

[63] Probably an allusion to *Posidonia*, a flowering sea-grass.

[64] Echoed by Aldrovandi (1638).

to the fruits in orchards and vineyards, which is scarcely credible, since our animal at least, cannot eat outside water....” (on the issue of seals and vineyards, see Human Attitudes, above).

Mystery has long surrounded Johann Hermann’s choice of name for the Mediterranean seal – *Phoca monachus* – thus spawning some rather imaginative theories by later writers (see Johnson & Lavigne, 1999a, p. 3). These have ranged from the animal’s reputed reclusiveness and monastic nature, to its sombre pelage.

For the most part, however, such confusion can largely be attributed to the fact that, for all these years, Hermann’s paper has only been available in 18th century *Hochdeutsch*, and few – if any – seal biologists have ever bothered to read it or have it translated. Indeed, Hermann himself is quite lucid on the matter, describing his impressions as the seal, seeking attention and indulging its curiosity, clambered up to the edge of its container to stare at the crowds. Arching itself up, with its fore flippers widely outstretched over the retaining board, it allowed the spectators to examine and touch it, showing no sign of fear.

“In this posture,” writes Hermann, “it looked from the rear not dissimilar to a black monk, in the way that its smooth round head resembled a human head covered by a cowl, and its shoulders, with the short, outstretched feet, like two elbows protruding from a scapular...”

It was only while writing up his paper that Hermann discovered that, by quirk of fate or coincidence, he was also adopting a traditional name for the seal from certain local fishing communities in the French Mediterranean, which apparently already knew the creature as *le moine*.

Several colleagues assured him by letter that, while in Marseille, they had encountered the same animals, which were sometimes caught in tuna nets. “If this is really the case,” muses Hermann, “then I’m even more astonished that this species has not yet been described.”[65] When Hermann objected that his correspondents might be confusing the animal with the harbour porpoise or shark, they replied that they knew both animals well. They were, they insisted, quite certain that they had seen the same seal species, and that it was known locally as ‘the monk’. The coincidence obviously perplexed Hermann, as did an eerie feeling of déjà vu. “I remember, as though from a dream, that I once read something in a French paper about an animal that was called ‘the monk’, and I concluded from the entire description that it must be a kind of seal. Unfortunately, I forgot to transcribe the section, or at least I am unable to find it amongst my papers.” He concludes by saying: “Perhaps the name ‘monk’ is only in use with certain people, or perhaps has been used only once in jest” (Hermann, 1779).

Unless one can possibly suspect Hermann of a lack of candour, the coincidence in naming the seal was more puzzling than even he was consciously aware of. What Her-

[65] Illustrating how difficult it was in this cataloguing age of Zoology to be certain that a species had not already been described and classified, Hermann agonises over the works of his predecessors. “It can’t be the one described by Belon,” he reasons, deceived again by the animal’s abnormal captive behaviour, “since neither the deep sleep that he ascribes to his seal, nor the voice compares to the present one.” Nor, he concludes, “could it be Buffon’s Indian seal or Schreber’s *Phoca pusilla*, since both species were described as having external ears” (Hermann, 1779).

mann evidently didn't realise was that the name 'monk' was actually in more widespread colloquial use in the Mediterranean than he had imagined. Not only did French fishers call it *le moine* but, according to the 19th century Dalmatian naturalist Spiro Brusina, their Italian counterparts knew it as *monaco marino,* the marine monk. Similarly, on the Dalmatian island of Vis, the popular name for the seal was *morski fratar*, the Sea Friar (Brusina, 1889).

While one might surmise that migrant fishers had been responsible for spreading the name between these regions, its linguistic origins will probably forever remain a mystery. In any event, those who coined the term obviously saw a certain affinity between the seal and the monks and friars who sought seclusion from the world. Many of these monasteries and hermitages were built on isolated Mediterranean islands, and on remote, breathtaking cliff tops overlooking the sea. As such, both species of monk shared the same general habitat. Fishers and seafarers would often seek refuge and hospitality at monasteries during stormy weather, a fact that might add another clarifying fragment to the puzzle (*e.g.* Johnson, 1988, 2001b). Possibly, the seal and human monks were both seen as essentially solitary, lonely animals, the black-robed men of God spending much of their lives in vaulted, dimly-lit cloister chapels, and the black-pelted seals inhabiting dark, arching caverns. Papon (1777) postulated that the captive seal on Lerinus, described in Guillaume Rondelet's 1554 *Libri de Piscibus Marinis* had, in fact, lived in the company of monks in the islet's monastery (Rondelet, 1554; Papon, 1777; Cheylan, 1974). On the isolated Dalmatian islet of Sveti Andrija, Benedictine monk Mavro Vetranic (1482-1576) composed his tongue-in-cheek poem about the impudent seal who tormented his fishing and, in 1599, brother Mauro Orbini was fulsome in his praise of the species' keenness of wit (Brusina, 1889).

On occasion, it seems, the friars were also not above killing seals, presumably for their pelts and oil. In May 1898, the curator of the Sarajevo Museum, Othmar Reiser, acquired a seal skin and skull fragments from a monastery on the isolated Strophades Islands south of Zakinthos, where monks "shoot the southern seal every year" (Reiser, 1912). Similarly, Ronald (1980) reports that monks on the Holy Mountain of Greece continued to fashion belts out of seal skin until the late 1970s.

There may even have been some truth to Hermann's vague conjecture that the name was originally used in jest – a fisher's gibing comment, perhaps, that the plump seal that was so often seen attacking their nets looked remarkably like the friar in the monastery up on the cliffs.

Monks aside, there were also numerous other popular names for the species. Throughout most of Dalmatia, writes Brusina, it was known as *morski medvid* or the sea bear – a name also found along Turkey's Black Sea coasts (Cem Kiraç *pers. comm.,* 2001). Other variants included the sea-calf (*morski telac*) and *vo morski*, the sea ox. Around Dubrovnik, the animals were called she-bears, while other writers referred to the animal as *morski junac*, the sea bullock, or as *morski pas*, a translation of the German *Seehund*. The Italian speakers of the Adriatic coast, particularly the Venetians and inhabitants of Trieste, also knew the sea-calf (*vedello marin*) as *vecchio marin*, the old man of the sea. Brusina, pondering this plethora of synonyms, concluded that the species should be

renamed *medjedica Dalmatinska* (Dalmatian she-bear), reasoning that since most seals were caught in Dalmatia, particularly around Kvarner island,[66] all good patriots should stick to their own rather than imported names (Brusina, 1889). On at least three Dalmatian islands – Meleda, Busi and Pelagosa – bays were also named after the seals, such as *Baja dell'orso* and *Medvjedina* (Kühn, 1930).

Curiously, many naturalists during this period claimed that the Adriatic was inhabited by both the common seal, *Phoca vitulina*, and an endemic species, a myth that endured until at least 1887. This misassumption, postulates Brusina, may have stemmed from examination of a pair of young female monk seals, captured, killed and then put on display in the Trieste Museum. While one was judged to have the normal pelage of an Adriatic sea-bear, the other had a dark, rust-coloured pelt. Unable to explain the disparity by any other means, it was expediently identified as a common seal, thus giving rise to a catalogue of errors by later scholars (Brusina, 1889).

Many years were to pass before Hermann's name for the species, *Monachus*, would become officially adopted by the scientific community. In the meantime, other naturalists, unaware of Hermann's description, christened the seal with other names.

In 1782, France's most prominent naturalist, Georges-Louis Leclerc de Buffon, published his own description of the Mediterranean seal, apparently without realising that Hermann had already done so (Buffon, 1782). Buffon came across his seal in a travelling show encamped in Paris in December 1778, and evidently felt sufficiently confident in the precedence of his discovery to christen it *Le phoque à ventre blanc* or the White-bellied seal. And yet, in another ironic twist, later naturalists who compared their accounts concluded that Hermann and Buffon had actually stumbled across the same individual seal in the same Venetian travelling show (Cuvier, 1813; King, 1956).

Whether the troupe Hermann had encountered in Strasbourg had made good on its promise to present the seal to King Louis XVI and Marie Antoinette at the Palace of Versailles remains a mystery. Understandably, the King and Queen may have had more pressing matters to attend to, including naval battles with the British off western Brittany,[67] France's secret aid to the American revolutionists and its official recognition of American Independence.[68] As fate would have it, by 1794 they were destined to lose their heads to their own revolution.

Illustrating the enduring human preoccupation with superstition, the seal circus arrived in Paris at a time when the monarchs were also preoccupied with the new fad of Mesmerism, which was seducing the city's gullible elite. Its founder, Viennese physician Franz Anton Mesmer, was convinced of his own occult powers to effect cures with animal magnetism. With the patronage of the French regents, he founded the Magnetic Institute, employing hypnotism, astrology, magic wands and spells to "mesmerise" his rich and powerful clients.[68]

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[66] Quarnero.

[67] The American Heritage Dictionary of the English Language, Third Edition, 1992.

[68] The People's Chronology by James Trager, Henry Holt and Company, Inc., 1994.

Fig. 30. Comte de Buffon's *phoque à ventre blanc*.

Exactly what France's most prominent naturalist made of such science is hard to say, but it was during this period that the aristocratic Buffon, with an unnamed friend or colleague in tow, sailed into the Paris seal show and set about describing the species for posterity.

It was not until 1813 that French naturalist François Cuvier noted the striking similarities of description penned by Hermann and Buffon, and concluded that both must have encountered the same individual seal. Monk seal history, such as it is, has generally accepted Cuvier's verdict at face value, with scant attention to several troubling details (Cuvier, 1813).

Certainly, both seals were male and were caught by Dalmatian fishermen in the autumn of 1777. Although Buffon specifies the capture site as the island of 'Guarnero', this is an apparent reference to the Gulf of Quarnero, known today as Kvarner, which stretches along the western coast of Cres.[69] While Hermann's Strasbourg seal was also netted there, so were many other seals who were fated to be carted around Europe in travelling shows (Brusina, 1889).

Some thirteen years earlier, Buffon had described the *phoca* of Aristotle as *le petit phoque (*Fig. 31), a species that supposedly also inhabited the Indian Ocean (Buffon, 1765).

[69] Formerly known as Cherso.

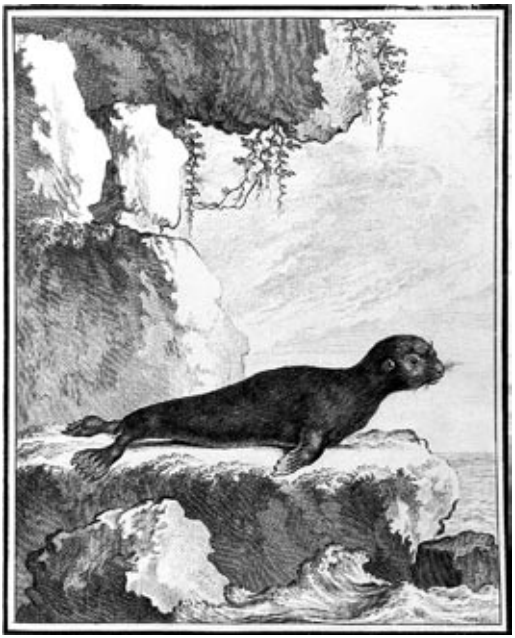

Fig. 31. Buffon's *le petit phoque*, which he erroneously labelled the "seal of the ancients" in 1765.

And yet suddenly face to face with a living Mediterranean seal, he makes no mention of the mysterious pup-like seal with the soft, wavy coat of hair and tiny, conch-like external ears, perhaps already realising that his earlier assumptions were flawed.[70]

"This large seal," writes the Comte de Buffon, "was caught on the 28th October 1777 in the Adriatic sea, close to the Dalmatian coast on the small island of Guarnero, 200 miles from Venice. Several times it was hunted without success, and it had already escaped five or six times by tearing the fishing nets. According to the reports of old fishers, it was known on this coast for over fifty years. They often pursued it, and believed that its great size was due to its advanced age." A plausible assumption, he adds, since its teeth were very yellow and worn, and its whiskers long, white and bristly (Buffon, 1782).

Particularly striking was the animal's pelt of smooth, shining brown hair, mixed with grey principally upon the neck and head, where it was dappled. Upon the belly, there was a large and distinctive white patch, which radiated out to the flanks.

[70] It was not until 1782, in his Supplement to *L'histoire Naturelle*, that Buffon owns up to his error. Now separating seals into two main groups, those with and those without external ears, he postulates that the Little Seal was "only a variation of a species of sea-bear" (*ours-marin*), and therefore could not have been the seal described by Aristotle. "I see," he adds, "that one has to look for the seal of the ancients among one of the species of seals without ears…" Just why Buffon did not associate his *phoque à ventre blanc* with the seal described by the ancients, is something of a mystery (Buffon, 1765; 1782).

The seal's eyes, he notes, are "large, full, and brown in colour, like those of an ox." Its mouth, also large, "is surrounded by strong whiskers, almost like fish bones." Instead of an external ear, he continues, "there was only a small opening which was almost concealed in the skin, and, though it was scarcely longer than a line, the animal had, nevertheless, very acute hearing."

Like Hermann, Buffon was impressed by the animal's amiable and inquisitive temperament. "Its aspect is mild," he writes, "and its disposition not fierce; its eyes are quick and indicate intelligence, or, at all events, they express the sentiments of affection and attachment to its master, whom it obeys with the utmost readiness."

Predictably, Buffon was also treated to a demonstration of the tricks that the animal had learnt from its keeper, upon whose command, he writes, "we saw it lay down its head, turn in various directions, roll round and round, raise the fore-part of its body quite erect in its trough, and shake hands with him. It responded to his voice and signs by a hoarse sound, which... might be compared to the hoarse bellowing of a young bull."

Before being tamed, however, the seal "bit its master furiously when interfered with, but when subdued it became quite docile, and could be handled with all freedom. You might thrust a hand into its mouth, and rest your head on that of the Seal. When its master called, it answered, however distant he might be; it looked round for him when it did not see him, and on discovering him after an absence of a few minutes, never failed to testify joy by a loud murmur. Some of its accents were sweet and expressive, and seemed the language of pleasure and delight."

Contradicting Hermann's account, Buffon notes that the Paris seal "slept frequently during the day; its snoring was heard at a considerable distance, and it could not be raised without difficulty from its slumbers." When drowsy, he adds, "it did not promptly attend to its master, and it was only by putting food under its very nose that it could be excited to its accustomed energy and vivacity."

Scarcely satisfied with any aliment other than fish, the seal displayed "a preference for carp, and still more for eels; these, though raw, were seasoned to its taste by rolling them in salt." While Hermann had remarked with some surprise that the Strasbourg seal consumed a rather paltry fourteen pounds [6.35 kg] of fish per day, Buffon claims that his seal "required about thirty pounds [13.60 kg] of these live fish every day; it greedily swallowed the eels entire, and even the carp which were first offered it, but, after devouring two or three entire, it subjected them to some preparation, by crushing their heads with its teeth, then partially gutting them, and concluded by gulping them head foremost."

Further doubt that the Hermann and Buffon seals were identical lies in the latter's lurid portrayal of the captive's frenzied sexual appetite, in which the animal was apparently transformed from a docile pet into a dangerous monster. "Though its natural disposition was mild, yet, from causes probably connected with its confinement, it was liable to occasional fits of irritation and violence," writes Buffon.

Though the precise cause of such unpredictable behaviour is missing from later English translations (*e.g.* Jardine, 1839), Buffon mainly attributes it to the animal's unquenchable libido, a subject that might have been considered too lewd for prudish Victorian Britain.

Yet according to the French naturalist, when the animal "felt the stirrings of love, which happened almost from month to month, then its usual gentleness changed into a kind of fury... its ardour manifested itself by roaring, accompanied by a strong erection; it wriggled and tormented itself in its crate, made abrupt and agitated movements and roared for several hours on end; with a similar roar it expressed feelings of pain when it was maltreated..."

These "fits of love-rage," he continues, "caused by a need the animal could not fully satisfy," lasted eight to ten days, and were so violent that on one occasion the animal escaped its crate after breaking it. At such times, he warns, the seal "was dangerous, and even ferocious, for then it knew no one, nor regarded its master's authority, so that he could not approach it till, after several hours, calm composure returned. On one occasion it seized him by the sleeve, and only with much difficulty was it forced to relinquish its hold, by forcing an instrument into its mouth. At another time it attacked a reasonably large dog, crushing its head with its teeth, and displayed the blindest rage against every object that came in its way. These paroxysms becoming worse and worse, it eventually pined away and died in August 1779, its body emaciated and covered with scabies or mange" (Buffon, 1782).

Though superficially inconsequential, this fact also casts doubt on the assumption that the seals of Hermann and Buffon were one and the same. The Dalmatian naturalist Spiro Brusina claims that the ultimate fate of the Strasbourg seal was to be stuffed and preserved in the Paris Museum (Brusina, 1889), yet this seems unlikely for a specimen whose pelt, according to Buffon, had been ravaged by scabies.

Several other disparities can also be added to the growing list. Hermann describes the pelage of his seal as black, with dark, greyish spots across the crown of the head and yellowish speckles upon the throat. Buffon, on the other hand, tells us that the coat of the Paris seal was of a brownish-grey, with a distinctive dappled pattern around the neck. The German professor also records the infamous bullet, lodged above the animal's right eye, and while it could be clearly detected by touch, Buffon makes no mention of this significant injury (Hermann, 1779; Buffon, 1782).

There is also one other inconvenient, if rather blatant discrepancy which Cuvier and later writers appear to have overlooked: the length of the two animals. Both naturalists measured their animals from nose tip to the outermost point of the hind flippers. Hermann states that he employed the *Pied du Roi*, or Parisian Imperial Foot, and we can only assume that Buffon, a native Frenchman, did the same. Hermann's Strasbourg seal was measured at eight feet, eight inches, while Buffon's came in at precisely seven and a half feet. Unless there is some particularly obscure explanation for this glaring disparity, the weight of evidence must surely indicate that the naturalists examined two, separate individuals.

Like the distinguished Strasbourg and Paris seals, a *Phoca monachus* touring Germany also received a learned guest in November 1815, as the show set up camp in Nürnberg. Professor Johann Wolf, Seminary Inspector and Local Schools Commissar, tells us that the seal, described as a sea lion by its keeper, had been caught at Livorno, Italy. It had refused food for seven days, had taken two months to become accustomed to fresh water,

and seven months to become completely tame. Though admitting that it possessed certain common characteristics with the monk seal, Wolf identified the black-coated animal as a *Phoca vitulina* or common seal, noting that, while its underside was whitish, it did not bear the distinctive belly patch of Hermann's *monachus*. Although his accompanying illustration clearly resembles a monk seal, Wolf, perhaps betraying a twinge of envy, was sceptical of his compatriot's reputed achievement. "Is Hermann's seal really a species in its own right?" he asks. "Was Hermann able to count precisely, the upper incisors of the living animal? Or did he merely rely on the statement of the owner of the seal? I was not able to count them, as much as the animal opened its mouth and as tame as it was." Observing the six-foot (1.82m) male from a safe distance of three and a half feet, Wolf also had difficulty in counting and describing the whiskers of the seal. Neither the keeper nor his assistant, he writes, could provide a precise description, and "to touch them, none dared." Wavering over the identity of the species, the perplexed professor finally opted for the *Phoca vitulina*. Strangely, even the seal's monk-like countenance, as it heaved itself up in an upright position and placed its fore-flippers on the edge of the pool, was not quite sufficient for Wolf to declare the animal a *Phoca monachus* (Wolf, 1818).

Like Hermann and Buffon, Wolf was impressed by the seal's intelligence and its ability to perform tricks upon command. Much like today's mind-numbing dolphinarium displays (Johnson, 1990), these were evidently the same in every monk seal travelling show. When ordered to do so, he remarks, the seal uttered a cry "which was supposed to sound like 'mama,' but of course this bore only a remote similarity to the word."

In 1785, the Dutch naturalist and physician P. Boddaert, using Buffon's description as his guide, reclassified the species according to the taxonomic principles of Linnaeus – whose work on systematics the French Count had refuted.[71] Recording its habitat only as the Adriatic, Boddaert transformed Buffon's *Phoque à ventre blanc* into the suitably Linnaean *Phoca albiventer*, a name that was to remain in use for many years (Boddaert, 1785; King, 1956).

In *Quadrupeds*, published in 1793, the British naturalist Thomas Pennant describes a Pied Seal, mistakenly identifying it as Buffon's *Phoque à ventre blanc*. His rather eccentric drawing depicts a seal with a broad white ring around its neck and crown, and a white patch under the foreflipper. The tapered and elongated nose would suggest a harp seal – possibly a stray animal that ventured south along the English coast where, according to Pennant, it was captured near the city of Chester in May 1776. Assuming it to be Buffon's white-bellied seal, he records the species as frequenting the coasts of the Adriatic. Yet curiously, he regarded the Mediterranean seal as an entirely different species, using both Rondelet's name of *Vitulus Maris Mediterranei* and Hermann's *Phoca monachus*. "When the animal is placed on its back," writes Pennant, seeking to explain Hermann's naming of the species, "the skin of the neck folds like a monk's hood" (Pennant, 1781, 1793).

Baron Georges Cuvier (1769-1832), France's celebrated pioneer in comparative anatomy, stumbled across a stuffed specimen in the Turin museum, and observed that the species must reach an average length of between ten and twelve feet (3.0-3.6m) when

[71] *Duden-Lexikon*, Vol. I, Bibliographisches Instut, Mannheim-Wien-Zürich, 1976.

fully grown (Jardine, 1839). Captured in Dalmatia and taken alive to the Italian city in around 1809, it perished the following year, presumably while still on show to the public (Brusina, 1889).

The first female monk seal to fall into the hands of zoologists was discovered by Georges Cuvier's brother, François, in 1813, in yet another travelling show. Like Hermann and Buffon, Cuvier was impressed by the seal's keen intelligence, remarking that, once tamed, such animals could finally be persuaded to "forget their former independence, and, by a second nature, enjoy their society with men" (Cuvier, 1813; Jardine, 1839).

Commenting on the seal's feeding and sleeping habits, Cuvier underscores the observations of Buffon: "The Seal devours its food without chewing it, and, after having removed the viscera, it always takes it into its mouth in such a direction that the fins and scales offer no obstacle to its easy passage. It sleeps throughout the live-long night, and cannot be kept awake during the day without the most unceasing perseverance. During sleep it is often observed covered with the water at the bottom of its trough, where of course it cannot breathe, and there it continues for an hour at a time."

Caught in Dalmatia in 1811, the seal was an immature female, measuring between seven and eight feet (2.1-2.4m), greyish-black in colour with a lighter chest, belly, and flanks.

"For two years it has been kept in a trough," observes Cuvier, "which scarcely exceeds its own dimensions, being only one foot longer, and two feet broader, than itself. Every day it receives several pounds of freshwater fish, and usually spends nine or ten consecutive hours in water ten inches deep. At the close of the day the water is removed, that the animal may be dry during the night, and, in spite of this artificial mode of life, it enjoys excellent health" (Cuvier, 1813; Jardine, 1839).

In seeking a broader classification of the species, Cuvier created the genus *Palagius*, possibly believing that other species would eventually be assigned to it (King, 1956).

By this time, science had christened the species *monachus*, *albiventer*, *bicolor*, and *le phoque à ventre blanc*. As if these weren't quite enough for a rapidly dwindling species, they were followed by a veritable plethora of synonyms coined by other, more obscure naturalists over the succeeding years, even though practically all depended upon the first-hand observations of Hermann and Buffon (King, 1956). Alternative names suggested for the species included *Phoca leucogaster* (Péron, 1816), *Phoca hermanni* (Lesson, 1828), *Monachus mediterraneus* (Nilsson, 1838), *Phoca crinita* (Menis, 1848), and *Heliophoca atlantica*, a name conjured up in 1854 by British naturalist John Edward Gray, who believed that the seals inhabiting Madeira belonged to a different genus and species (Gray, 1854).[72]

Other synonyms for the genus also sprouted, including Pelagocyon (Gloger, 1841), Rigoon (Gistel, 1848), and Leptonyx,[73] which saw the monk seal linked with the southern

[72] In 1864, Gray received a "very good skeleton" from Algeria, providing science with new insights into the distribution of the monk seal. Upon receipt by the British Museum, the animal was labelled *Phoca leporina*, yet another zoological synonym to add to the list. The specimen, wrote Grey, shows that "the Seal, which was formerly believed to be confined to the north shore of the Mediterranean, is also found on the southern one…" (Gray, 1864; Gray, 1866).

Phocids under the subgenus *Leptorhynchus* (Giebel, 1848). Ironically, Cuvier's *Pelagios* in itself bequeathed the genus several additional derivatives, apparently due solely to careless editing or typesetting[74] (King, 1956; Ronald, 1972).

The free-for-all continued despite calls to respect the customary procedure of crediting discoveries to those who had first made them. In 1822, two decades after Hermann's death in Strasbourg, British naturalist John Fleming, possibly exasperated by the synonym-maze, suggested that zoology officially adopt the genus *Monachus* (Ronald & Healey, 1976). And yet it was not until the early 20th century that final recognition was afforded to Hermann as the more popular synonyms gradually fell into disuse.

CONCLUDING REMARKS

Although it may be thought of as an obscure species today, its very survival hanging by a thread, the Mediterranean monk seal has appeared in numerous writings inked onto papyrus, parchment or paper during the last 3000 years.

The seal, whose existence is scarcely even known to most Europeans today, formerly touched the lives of many, including poets, philosophers, emperors, satirists, magicians, physicians, naturalists, explorers, seafarers and, of course, fishermen.

Homer, Aristotle, Hippocrates, Plutarch, Galen, Avicenna and Gesner are among some of the ancient and Renaissance world luminaries who recorded observations about the Mediterranean seal and its relationship to human culture, folklore, science and economy.

The seal played a distinct role in Mediterranean myths and superstitions. Animistic imaginations transformed the creatures into nymphs and mermaids. In Greek mythology, they were placed under the protection of Poseidon and Apollo.

And yet aside from such benign traditions, history shows that the human relationship with *monachus* has always been starkly utilitarian.

Although there are some notable exceptions, by and large this relationship was governed by the species' perceived value in fur, oil, and meat, its efficacy in medicine and magical rites, its public appeal in circuses and zoos. The benefits, real or imagined, were legion. The fur of the seal could predict storms and tempests, while mother's milk found in the stomach of pups was reputed to cure epilepsy and other diseases. The right flipper, placed under the pillow, would ward off insomnia, while the whiskers, distilled into a potion, could win friends and lovers or drive off enemies. Some explorers won small fortunes by boiling seals into oil, and even the poorest fisherman or farmer might benefit by turning the animals into shoes or harness leather.

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[73] The German naturalist Johann Christian Daniel Schreber, coined the name *Leptonix Monachus*. Providing a shortened version of Hermann's description, he identified the species "as the seal of the ancients" (Schreber, 1846).

[74] Indeed, even François Cuvier himself inadvertently renamed his original Pelagios genus *Pelagius* in 1826. This was followed by Pelagus (McMurtie, 1834) and Pelagias (Gray, 1837).

For the most part, then, monk seals have always been worth far more dead than alive.

Even for zoos and menageries – which presumably had a vested interest in keeping their captives alive for as long as possible – monk seals were obviously worth far more out of their element than along the coasts of their birth. The showman's 'talking fish' may have had a limited shelf life as it was carted around Europe in appalling conditions, but still it generated more than enough gold and silver coin to enrich its owner and pay for its own replacement.

Even when counting costs rather than profits, attitudes towards the species tended to be essentially utilitarian in nature – the seal branded as a pest that threatens fish stocks and damages fishing nets, for example. Such hostility was probably responsible for transmuting the mermaid seal into the sea devil in the folklore in the Dark Ages, and also inspired the myth that the seal would hunt down fishermen in vicious, tooth-gnashing, packs.

Even conservation of the species has rarely risen above the prevailing utilitarian tide.

In the 19th century, hunters noticed the decline of the species and appealed for its preservation – if only to allow other specimens to be peppered with shot.

A century later, international charities and scientific institutions were voicing concern about the plummeting fortunes of the seal, yet largely inspired by the same utilitarian reasoning. Monk seals had to prove their value and usefulness to human beings in order to be deemed worthy of survival. A report to the International Union for the Conservation of Nature (IUCN)[75] in 1962, for example, advocated the following measure to halt the continuing decline of the species: "To point out to governments that Monk Seals are an important but now only a potential natural resource. Managed properly the seal could become a permanent source of skins, meat and oil" (Wijngaarden, 1962).

More recently, scientists have pondered whether the monk seal might, if protected, regain some of its legendary tameness, thereby becoming a potential attraction for the tourist industry, whose current brutal indifference is largely responsible for shunting the species into an early grave. Others have suggested that fishermen might be persuaded to relinquish their traditional hostility towards the seal by ferrying paying tourists into marine protected areas (Sergeant et al., 1979; Johnson & Lavigne, 1999b).

While the logic of bringing such protagonists into the conservation process may be unassailable from a pragmatic standpoint, it does little to alter the fact that, fundamentally, utilitarian attitudes towards the species remain intact.

Even passive arguments tend to reflect the same utilitarian and anthropocentric values, the disappearance of species, for example, being lamented as a loss to human heritage. In much the same vein, research that is often invasive is justified on the basis that it will benefit science. Few words are ever spoken, it seems, of the monk seal's intrinsic value, irrespective of human self-interest.

The apparent reluctance of the international conservation community to address, consistently and comprehensively, the dwindling fortunes of the monk seal may eventually prove attributable to the same factors.

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[75] Now also known as the World Conservation Union.

Shunned by most multinational conservation charities, it appears that the Mediterranean monk seal – despite the dubious privilege of being elected Europe's most endangered marine mammal – has yet to prove itself capable of rivalling the financial clout, public recognition and press coverage of, say, the giant panda, the African elephant or the harp seal.

While many myths are rooted in utilitarian values, on occasion, the inverse may be equally true.

For coastal fishermen, for example, the seal continues to be a scapegoat for 'their' diminishing fish stocks, even as industrial trawlers plunder the sea a figurative stone's throw from their own boats.

Or consider the comforting myth – so reminiscent of a more ancient one, "Rome has spoken; the matter is settled!" – that legislation outlawing the killing of monk seals has actually had a measurable effect in stemming the decline of the species. Indeed, with remote, tortuous coastlines and lack of enforcement, direct killing has consistently remained the most serious mortality factor affecting *monachus* in the eastern Mediterranean (Androukaki et al., 1999).

Likewise, international conference resolutions, treaties and conventions, action plans endorsed by governments and scientists, often conjure up the myth that conservation of *Monachus monachus* is a coherent, tangible force with assured funding, established targets and regular audits of results. Such is not the case, however, and has little prospect of becoming so in the foreseeable future.

The reality on the ground is that, even a quarter century after the landmark Rhodes international conference drew up a raft of measures to rescue the species from impending oblivion, and despite the single-minded efforts of grassroots organisations in pursuing those objectives, the monk seal continues to be betrayed by official indifference (Ronald & Duguy, 1979). Twenty-five years after the event, in fact, governments have yet to establish even one fully-functioning marine protected area for the species in the Mediterranean basin, let alone the interconnecting network of reserves envisaged at Rhodes.

Arguably, it is only through the reading of history that we can begin to understand why the seal of the Mediterranean sea is so perilously close to extinction.

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